

Biological Materials Shipping Manual

Procedure: 2.16
Version: 1.4

Created: 1/10/14
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A. Purpose

Many biological materials, as well as dry ice and common preservatives, are regulated as *dangerous goods* when shipped in transit via ground, air, rail or vessel. This manual serves as a guidance document to aid Columbia University personnel with the shipping of dry ice and/or biological materials in compliance with University policies and the regulations promulgated by the US Department of Transportation (DOT) and International Air Transport Association (IATA).

Compliance with shipping regulations is critical to ensure the successful arrival of shipments, the safety of personnel involved in the shipping, handling, and receiving of shipments, and to avoid the severe civil and criminal penalties that can result from non-compliance.

B. Applicability

The requirements of this document apply to all Columbia University faculty, staff, or students involved in the preparation of shipments of dangerous goods. This includes:

- Taking an initial training and certification course, with recertification every two years
- Classifying biological materials for shipment,
- Determining appropriate packing instructions,
- Selecting materials for packaging,
- Packing the samples for shipment,
- Marking and labeling of packages,
- Completing and/or signing shipping documents,
- Securing packages prior to releasing them to a courier,
- Retaining shipping documents for two years

The scope of this manual is limited to the preparation of shipments of biological materials that do not require the completion of a Shipper's Declaration (see section **D. Definitions**). For shipments involving materials that require a Shipper's Declaration, such as Infectious Substances – Category A, please contact Environmental Health & Safety for assistance. Procedures and policies for the inter-campus transport of biological materials are also described.

C. Responsibilities

Principal Investigators are ultimately responsible for ensuring compliance with all shipping regulations for dangerous goods shipments sent from Columbia University laboratories, and for ensuring that any personnel to be involved in the preparation of dangerous goods shipments receive appropriate training. All dangerous goods shipments remain the responsibility of the sender throughout the period of transport until final receipt.

D. Definitions

Airway Bill: A document that serves as a note of consignment to the carrier, and which is used to track a shipment during air transport. FedEx air waybills are sometimes referred to as "shipping

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labels, though the two are not always the same. An air waybill for FedEx will display the words “US Airbill” for domestic shipments (see Fig. 6 below), or “International Air Waybill” for airway bills that may be used for both domestic and international shipments.

Carrier: The company that transports the material (e.g. FedEx).

Consignee: The recipient of the material.

Customs Broker: A company that handles clearance of customs in the destination country for international shipments

Dangerous Goods are defined as “articles or substances which are capable of posing a significant risk to health, safety, property, or the environment when transported by surface or air.” The USDOT refers to these materials as “hazardous materials,” and the two terms may be used interchangeably. If you are unsure whether a certain material qualifies as a dangerous good under these regulations, please contact EH&S for assistance. There are nine hazard classes of dangerous goods, though this manual will focus on those related to the shipment of biological materials:

1. Explosives
2. Gases
3. Flammable liquids
4. Flammable solids
5. Oxidizing substances and organic peroxides
6. Toxic and infectious substances
7. Radioactive material
8. Corrosives
9. Miscellaneous dangerous goods

The **US Department of Transportation (USDOT)** is the US government agency responsible for the regulatory oversight of the transportation of *dangerous goods* within the United States via ground, in accordance with Federal Regulations (49 CFR 100 to 185). The USDOT uses the term “Hazardous Materials” in place of *dangerous goods*. For the purposes of this guidance document, the term *dangerous goods* will be used.

Federal Aviation Authority (FAA) inspectors are responsible for policing dangerous good transported by air. They have the authority to conduct unannounced facility audits to confirm compliant shipping practices, and to impose fines and penalties for non-compliance.

A **Hazardous Materials Employee** is any person involved in the preparation, marking, labeling, documentation, or transportation of a shipment containing dangerous goods. Hazardous Materials Employees are required to receive training pertaining to the USDOT and IATA regulations and their responsibilities with respect to these regulations.

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The **Hazardous Materials Table** is the standard reference table containing all operational requirements for properly preparing a shipment of dangerous goods for transportation in compliance with DOT and IATA regulations. The complete table is available at 49 CFR 172.101.

The **IATA Dangerous Goods Regulations** are based on the *ICAO Technical Instructions*, and govern all transportation of *dangerous goods* by air, both international and domestic.

The **ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air** are the set of technical guidelines developed by ICAO, forming the basis for the *IATA Dangerous Goods Regulations*.

The **International Air Transport Association (IATA)** is a trade association of the world's major airlines. IATA promulgates the *IATA Dangerous Goods Regulations*.

The **International Civil Aviation Organization (ICAO)** is an agency of the United Nations which codifies the principles and techniques appropriate for the safe transportation of *dangerous goods* in the *ICAO Technical Instructions*.

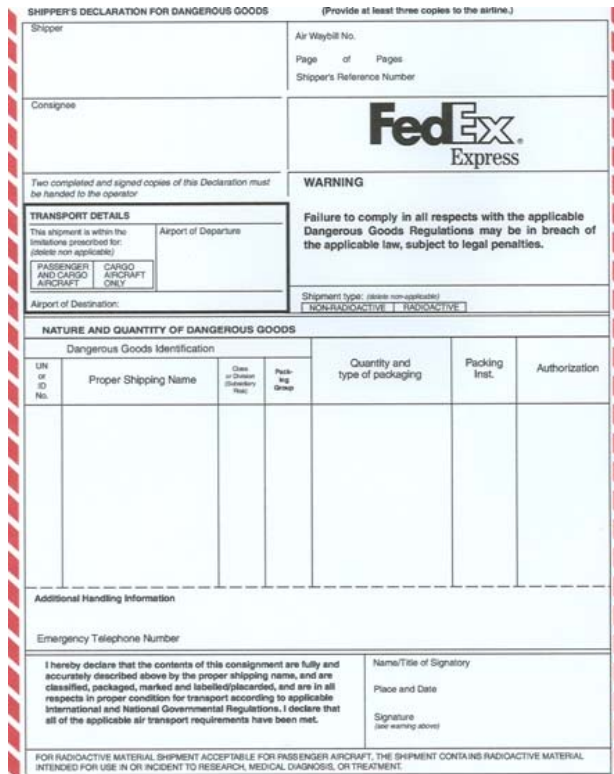
Shipper: The party whose name appears on the air waybill, shipper's declaration (if applicable), and package (if applicable), and who is responsible for compliance with the regulations.

Shipper's Declaration: The standard form used to document and accompany shipments of certain dangerous goods, such as Category A Infectious Substances, when sent by air (see Fig. 1). The types of shipments covered in this manual do not require a shipper's declaration.

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SHIPPER'S DECLARATION FOR DANGEROUS GOODS (Provide at least three copies to the airline.)

Shipper: _____ Air Waybill No. _____
 Page _____ of _____ Pages
 Shipper's Reference Number _____

Consignee: _____

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

TRANSPORT DETAILS
 This shipment is within the limitations prescribed for: (delete not applicable)
☐ PASSENGER ☐ CARGO ☐ AIRCRAFT
☐ AND CARGO ☐ AIRCRAFT ONLY

Airport of Departure: _____
 Airport of Destination: _____

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.

Shipment type: (delete non-applicable)
☐ NON-EXCLUSIVE ☐ RADIOACTIVE

NATURE AND QUANTITY OF DANGEROUS GOODS

Dangerous Goods Identification				Quantity and type of packaging	Packing Inst.	Authorization
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Packaging Group			

Additional Handling Information: _____

Emergency Telephone Number: _____

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: _____
 Place and Date: _____
 Signature (over wording above): _____

FOR RADIOACTIVE MATERIAL SHIPMENT ACCEPTABLE FOR PASSENGER AIRCRAFT, THE SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN OR INCIDENT TO RESEARCH, MEDICAL DIAGNOSIS, OR TREATMENT.

Fig. 1: Example of Shipper's Declaration

E. Procedures

1. Training

All personnel involved in the preparation of dangerous goods shipments (see Section **B. Applicability**) must undergo training on US and international shipping regulations. This training must be completed initially before participation in any shipping activities, and must be refreshed every two years, in accordance with IATA regulations. Trainees must complete a test to demonstrate understanding of the training material in order to be certified to ship dangerous goods. Training certificates should be retained for two years and readily accessible to auditors. Certified individuals must perform all steps in the shipping procedures. It is not permissible to have an untrained person complete activities such as packaging and handling, or to prepare shipping documents and then have a trained shipper sign the documents.

This manual is intended to be instructive for those that have already completed training, and is not a suitable replacement for training. Environmental Health & Safety (EH&S) offers the following training courses for the shipping of biological materials through the Training Center of the [RASCAL](#) website:

- TC0507 – Shipping Biological (infectious and potentially infectious) Materials and Genetically Modified Microorganisms (GMMOs)

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- TC0076 – Shipping with Dry Ice, Exempt Specimens, and Excepted Quantities of Dangerous Goods

Although this training is typically only offered online, EH&S is available to provide customized live training to groups upon request.

2. Classification

If a package is incorrectly classified, packaged, labeled or documented, the carrier may refuse to accept it, or more likely, return it to the shipper. Furthermore, FAA inspectors may flag shipments. FAA inspectors typically inspect packages passing through FedEx hubs. Non-compliant packages are very easy to trace back to the shipper. Inspectors may use the event as a trigger to conduct campus-wide inspection of non-compliant institutions. Significant fines and penalties can result.

Proper classification is critical to ensure the correct management of any shipment of biological materials. Over-classification is also unacceptable. Though more stringent than necessary packaging materials may be used if these are the only materials available (e.g. using a Category A packaging kit to send a Category B shipment), any irrelevant markings or labels must then be defaced or completely covered with the correct markings and labels. Contact EH&S for assistance with classification if necessary by completing an “Intent to Ship” form (<http://www.ehs.columbia.edu/IntentToShipHazardousMaterialsForm.pdf>).

- a. **Infectious Substance – Category A** (Division 6.2) is any material containing a pathogen that is capable of causing life-threatening or fatal disease, or permanent disability in healthy humans or animals. Pathogens can include micro-organisms (such as bacteria, viruses, parasites, or fungi) or other agents capable of causing disease in humans or animals, such as prions. Examples of pathogens included in this category are included in **I.1. Appendix 1. - Examples of Category A Infectious Substances**.

Category A shipments may not be prepared by laboratory personnel without direct assistance from EH&S.

- b. **Biological Substance – Category B** (Division 6.2) is any infectious substance that does not meet the criteria for inclusion in Category A. This category also includes any human specimens infected with Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Human Immunodeficiency Virus (HIV), or other bloodborne pathogens not otherwise included in Category A. Human specimens that are being shipped for infectious disease screening are included in this category.
- c. **Genetically Modified Organisms (GMO) or Microorganisms (GMMO)** are organisms (or microorganisms) in which genetic material has been purposely altered through genetic engineering in a way that does not occur naturally. If

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GMOs or GMMOs do not meet the definition of a Category A or Category B substance, they must be classified as Genetically Modified Organisms or Genetically Modified Microorganisms, UN3245. These are classified as a miscellaneous dangerous good (Class 9). If GMOs or GMMOs do meet the definition of a Category A or Category B substance, they must be classified as Category A or Category B, as appropriate.

- d. **Exempt Human Specimens** or **Exempt Animal Specimens**, according to 49CFR 173.134(b)(11), include any “human or animal sample (including, but not limited to, secreta, excreta, blood and its components, tissue and tissue fluids, and body parts) being transported for routine testing *not related to the diagnosis of an infectious disease*, such as for drug/alcohol testing, cholesterol testing, blood glucose level testing, prostate specific antibody testing, testing to monitor kidney or liver function, or pregnancy testing, or for tests for diagnosis of non-infectious diseases, such as cancer biopsies, and for which there is a low probability the specimen is infectious.” Human and animal cell lines that are not reasonably suspected to contain pathogens can be classified as exempt specimens.
- e. **Excepted Quantities** of dangerous goods are small amounts of certain dangerous goods that are permitted relaxed packaging and labeling requirements when used as a preservative or stabilizer. Amounts of 30 ml or less per primary receptacle of flammable liquids (Class 3), corrosives (Class 8), or miscellaneous dangerous goods (Class 9) may be classified as excepted quantities. Common preservatives used for this purpose include ethanol, formaldehyde $\geq 4\%$, and acetic acid.

Chemical preservatives used **in excepted quantities** (<30 ml per primary container) to ship infectious substances (Category A or Category B) are exempt from labeling requirements. If used as preservatives for any material that cannot be classified as Category A, Category B, or Genetically Modified Microorganisms, these materials are subject to the requirements of their respective hazard classes, but may be shipped as **excepted quantities** with the corresponded relaxed requirements if falling under the threshold for this designation.

- f. **10% formalin (4% formaldehyde)** is at a concentration low enough to be exempt from shipping regulations in any quantity.
- g. **Dry Ice** is regulated as a miscellaneous dangerous good (Class 9) when shipped by air due to the asphyxiation hazard that it may pose, and the potential explosive hazard if packaged improperly.

- h. Non-regulated materials** are exempt from dangerous goods shipping regulations if not combined with any additional hazardous material that is subject to regulation. These include each of the following:
- Dried blood spots collected by applying a drop of blood to absorbent material, or fecal occult blood screening samples
 - Environmental samples (including food and water) that do not pose a significant infection risk
 - Substances containing microorganisms (not including GMMO) that are non-pathogenic to humans or animals (e.g. *E. coli* K12)
 - Blood or blood components collected for the purposes of transfusion or for the preparation of blood products to be used for transfusion or transplantation
 - Any tissues or organs intended for use in transplantation
 - Substances in a preserved, neutralized, or inactivated state such that any pathogens no longer pose a risk of infection
 - Purified nucleic acid or protein, antibodies
 - Biological products derived from living organisms which are used for the prevention, treatment, or diagnosis of disease in humans or animals **and that have received approval from the FDA** (e.g., vaccines) These materials must be packaged in accordance with their approval.

3. General Requirements for Packaging, Labeling, and Documentation

a. Packaging

As a general rule, any shipment containing biological materials, including those containing non-regulated materials, should be prepared under a standard triple-packaging scheme to withstand the normal shocks, temperature and pressure changes common during regular transport without leaking to the outside of the container. The following section outlines the minimum packaging suitable for shipment of biological materials, though additional requirements for shipping dry ice, Genetically Modified Microorganisms, Biological Substances, Category B, or Excepted Quantities of Dangerous Goods are explained further in their respective sections below. This minimum packaging regimen should consist of:

i. Primary Receptacle

The primary receptacle is the vessel in which the actual material is contained; it must be leak-proof if there is any liquid component and sift-proof if only solids are shipped. Primary receptacles may be made of plastic, metal, or glass, and may include screw-top vials/tubes, glass ampoules, or rubber-stopped glass with metal seals. Plastic receptacles are preferred to glass when possible. Since shipments travel by airplane at high altitude, to prevent reduced air pressure from causing the tops to

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pop off, shippers must provide a positive means of maintaining a seal, such as a heat seal or metal crimp seal. Screw-top vials/tubes may be secured with paraffin tape or shrink seals. Glass vacuutainer tubes with rubber stoppers are unsuitable receptacles. Primary receptacles must be secured during transport using adequate packaging with appropriate cushioning and absorption properties to ensure that they cannot break, be punctured, or leak. If multiple fragile primary receptacles are present within the secondary container, they must be individually wrapped or separated so as to prevent contact between them.





Figs. 2a-b: 2a (top) shows a 15 mL screw-top tube, an acceptable primary receptacle. 1b (bottom) shows the primary receptacle individually wrapped in bubble wrap to cushion it during transport.

ii. Secondary Container

Secondary packaging must likewise be leak-proof if any liquid component is present and sift-proof if only solids are shipped. Ziploc specimen bags are acceptable. For liquids, sufficient absorbent material must be placed between the primary receptacles and the secondary container to absorb the entire contents of the package. The absorbent material must be capable of preventing an escape of any material to the outside of the secondary container without compromising any cushioning materials.



Figs. 3a-b: 3a (top) shows the cushioned primary receptacle alongside the secondary receptacle, along with absorbent material. 2b (bottom) shows the secondary receptacle sealed. In this case, the secondary receptacle, when properly sealed, is rated to withstand a maximum pressure differential of 9k kPa, making it suitable for shipping Biological Substances, Category B.

iii. Outer Package

Outer packages must be of rigid construction, consisting of a material adequate for the package capacity, mass and intended use. Outer packages must have one outer surface with minimum dimensions of 100 mm x 100 mm in order to bear all required labels and markings.



Fig. 4: An insulated tertiary (outer) container consisting of an insulated foam box and an outer fiberboard box.

b. Labels and Markings

All hazard labels must be durable and either self-adhesive or directly printed onto the outer package. Self-printed labels attached with clear tape are not acceptable. When more than one hazard diamond or UN identification number label is used on the same package (e.g. UN3373, UN1845 etc.), both labels must be on the same side of the box. Labels must not be bent around edges or corners of boxes. Markings and labeling must not touch or overlap one another.

Labels displaying the hazard class or UN identification number must meet specified dimensions and remain unmarked and unobscured. These must be

oriented “on point,” upright and in diamond orientation (square set at 45 degrees). See Fig. 12 for an example.

Shippers must purchase their own labels, but EH&S can provide limited quantities for urgent shipments or to get shippers started.

c. Shipping Documents

Shippers are required to retain documentation of dangerous goods shipments for a minimum of two years. None of the materials covered in this manual require the completion of a Shipper’s Declaration. Documentation for these types of shipments is restricted to the correct completion of the air waybill, and in some cases, the inclusion of an itemized list of contents.

Adhesive air waybills have multiple carbon copy sheets that can easily become detached during transit. The use of a clear plastic pouch to protect the air waybill is preferred. However, an air waybill in a clear pouch does not meet consignee and shipper address requirements. Therefore, labeling or writing the consignee and shipper address on the box itself in a permanent marker will meet the requirements.

4. Requirements for Shipping Dry Ice

Dry ice is regulated as a dangerous good when shipped by air. Shipments containing dry ice must be packaged and labeled appropriately and secured under the supervision of trained personnel until picked up by the courier.

a. Packaging requirements

Shipments containing dry ice must be packaged according to the following principles, in accordance with IATA Packing Instruction 954. Packaging can be re-used as long as its integrity is intact and any existing non-applicable labeling is defaced or covered.

- i.** The packaging must be insulated to prevent the rapid sublimation of carbon dioxide.
- ii.** The packaging must allow for the dissipation of gaseous carbon dioxide. Dry ice must never be packaged inside of an air-tight container that would allow build-up of pressure.
- iii.** Primary and secondary receptacles must tolerate the low temperatures of the dry ice without the integrity of these receptacles being compromised.

- iv. A fiberboard outer box that encloses a Styrofoam box will provide the most durability; however, it is acceptable to use a Styrofoam shipper as the outermost packaging. Bear in mind that if other hazardous materials are shipped, such as U3373 infectious agents, these may require a fiberboard outer box.
- v. Primary and secondary receptacles must be packaged with interior support that will maintain positions after the dry ice has dissipated. The shipper should include a sufficient quantity of dry ice to keep the materials frozen for the full duration of the trip. A commonly accepted rule of thumb is to use 3 kg of dry ice for every 24 hours in transit.
- vi. If any biological materials are included in the shipment, the packaging materials must also meet the specifications of the applicable IATA packing instructions, or, if the material is classified as non-regulated or exempt, adhere to the guidelines outlined in **Section E.3: General Requirements for Packaging, Labeling, and Documentation**.

b. Labels and Markings

The outer containers of shipments containing dry ice must bear the following markings and labels. An example is pictured below (fig. 5).

i. Class 9 Label

Dry ice is classified as a “miscellaneous” hazard, which is assigned Class 9 according to US and international regulations. The outer package of any shipment containing dry ice must be labeled with a Class 9 hazard label. The label must be:

- a. Self-adhesive, or printed directly on the outer package.
- b. 4” x 4” in size.
- c. Oriented “on point,” upright and in diamond orientation (square set at 45 degrees).
- d. Unmarked and not obscured.

ii. “UN1845” Label

The UN ID number, UN1845, must appear on the outer package. This can be neatly printed directly on the outer package in large letters with indelible ink, or one may affix a Class 9 hazard label made specifically for dry ice shipments that includes this UN identification number. In addition, the UN1845 on your package must be in at least 6 mm print for packages under 30KG and at least 12mm print for packages over 30 KG.

If the label you are using doesn't meet this requirement please rewrite the UN number legibly and at the appropriate size.

iii. Proper Shipping Name and Weight

The words "Dry ice" or "Carbon dioxide, solid" must appear on the outer package, along with the net weight of dry ice enclosed **in kilograms**. This can be written directly on the outer package in large letters with indelible ink, or one may affix a Class 9 hazard label made specifically for dry ice shipments that meets these requirements (Figure 5).

iv. Contact Information

The outer package must be clearly marked in printed English with the full names and addresses of both the shipper ("from") and consignee ("to"). A phone number for the shipper must also be provided. A live person must be reachable at this number at any time while the package is in transit, 24/7.



Fig. 5: Example of a pre-printed, commercially available label for shipment containing dry ice

c. Shipping Documents

For non-regulated biological materials or exempt human or animal specimens, a shipper's declaration is not required, nor is it necessary to include a commercial invoice or an itemized list of contents between the secondary container and outer package. The carrier's air waybill must be filled out correctly to ensure that the package is not over-classified. An example of a completed FedEx air waybill is given below (Fig. 6).

- i. Sender/Receiver Names and Addresses** (sections 1 and 3 in Fig. 6 below)

Complete the "from" and "to" information.

ii. Shipping Service (section 4 in Fig. 6 below)

Select the appropriate shipping service. Priority or overnight shipping is not required for dry ice shipments that do not contain any other dangerous goods.

iii. Packaging (section 5 in Fig. 6 below)

Select “other” packaging. FedEx does not allow dry ice to be shipped in FedEx packaging.

iv. Special Handling and Delivery Signature Options (section 6 in Fig. 6 below)

Shippers must consult with consignees concerning their internal procedures for receiving and processing packages, and complete this section accordingly.

v. Dangerous Goods Status (section 6 in Fig. 6 below)

- a.** Select the box marked “Yes, Shipper’s Declaration not required.” While dry ice is considered a dangerous good when shipped by air, a Shipper’s Declaration is not required if no other dangerous goods are present that require a Shipper’s Declaration
- b.** Select the box marked “Dry Ice.” List the number of packages and weight of dry ice in the indicated spaces, to match the information you have provided in the markings on the outer package.

vi. Number of Packages (section 7 in Fig. 6 below)

Complete in accordance with the details of your shipment.

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FedEx Express Package US Airbill Tracking Number: 8017 4980 3558

1 From Please print and press hard.
 Date: 05/05/2013 Sender's FedEx Account Number: 1234-5678-9
 Sender's Name: John Jacob Jingleheimer Schmidt Phone: (212) 305-6780
 Company: COLUMBIA UNIV / EHS
 Address: 601 W 168TH ST APT 63-66
 City: NEW YORK State: NY ZIP: 10032-3706

2 Your Internal Billing Reference OPTIONAL

3 To
 Recipient's Name: Homer Simpson Phone: (123) 555-6789
 Company:
 Address: 742 Evergreen Terrace
 City: Springfield State: CA ZIP: 12345

4 Express Package Service * To meet locations. Packages up to 150 lbs. For packages over 150 lbs., use the zero FedEx Express Freight US Airbill.
 NOTE: Service order has changed. Please select carefully.
 Next Business Day
☐ FedEx First Overnight
☐ FedEx Priority Overnight
☒ FedEx Standard Overnight
 2 or 3 Business Days
☐ FedEx 2Day A.M.
☐ FedEx 2Day
☐ FedEx Express Saver

5 Packaging * Declared value limit \$500.
☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options
☐ SATURDAY Delivery
☒ No Signature Required
☐ Direct Signature
☐ Indirect Signature
 Does this shipment contain dangerous goods?
☐ No ☒ Yes
 Dry Ice 1 5
 Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

7 Payment Bill to:
☒ Shipper
☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

Total Packages: 1 Total Weight: 5 lbs. Total Declared Value: \$

Get transit times. Schedule pickups. Create labels. Go to fedex.com.

Fig. 6: Example of FedEx air waybill for shipment of dry ice.

5. Requirements for Shipping Excepted Quantities of Dangerous Goods

Small quantities of some dangerous goods commonly used as preservatives may be shipped as *excepted quantities*, allowing for relaxed requirements for training, packaging, labeling, and documentation. Shippers are required to complete training relevant to the shipping of dangerous goods in excepted quantities.

To determine if the material to be shipped is eligible for shipping as an excepted quantity, you must first determine the proper shipping name (e.g. "ethanol"). Column F of the IATA table (4.2 List of Dangerous Goods) displays the EQ (Excepted Quantity) code for each material, assigning a value of E0 – E5. This EQ code corresponds to the limits listed in table 2.6.A of the IATA Dangerous Goods Regulations, reproduced below.

Fig. 7: IATA Table 2.6.A - Excepted Quantity Codes for Table 4.2 of the IATA Dangerous Goods Regulations

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Code	Maximum quantity per inner packaging	Maximum quantity per outer packaging
E0	Not permitted as Excepted Quantity	
E1	30 g/30 mL	1 kg/1 L
E2	30 g/30 mL	500 g/500 mL
E3	30 g/30 mL	300 g/300 mL
E4	1 g/1 mL	500 g/500 mL
E5	1 g/1 mL	300 g/300 mL

Shippers that do not have access to the IATA Dangerous Goods Regulations may contact EH&S for information pertaining to permissible excepted quantities of specific dangerous goods. Guidelines for commonly used preservatives are outlined below.

For preservatives commonly used to ship biological materials, amounts of 30 ml or less per primary receptacle of flammable liquids (Class 3), corrosives (Class 8), or miscellaneous dangerous goods (Class 9) may be classified as excepted quantities. Common preservatives used for this purpose include ethanol, formaldehyde solutions \geq 4%, and acetic acid.

If used to ship Category B or Category A Infectious Substances, the use of these preservatives in excepted quantities (<30 mL per inner container and <500 mL per outer container) is **exempt from further labeling or documentation requirements**. All other requirements must be followed in accordance with the package's classification. For exempt human or animal specimens, GMMO, or any non-regulated biological material, please follow the guidelines below.

a. Packaging requirements

i. Primary Receptacle

See section **E.3: General Requirements for Packaging, Labeling, and Documentation**.

ii. Secondary Container

See section **E.3: General Requirements for Packaging, Labeling, and Documentation**.

iii. Outer Package

See section **E.3: General Requirements for Packaging, Labeling, and Documentation**.

iv. Package Testing Requirements

It is strongly recommended that shippers purchase packing materials that have been tested and certified by the vendor to meet the specifications and requirements of the IATA packing instructions (see I.2. Appendix – Approved Packaging Suppliers).

b. Labels and Markings

Shipments that contain material classified as excepted quantities of dangerous goods must be shipped with a special excepted quantities label rather than the usual hazard class labels. The dimensions of this label must be a minimum of 100 mm x 100 mm, and it must be red.

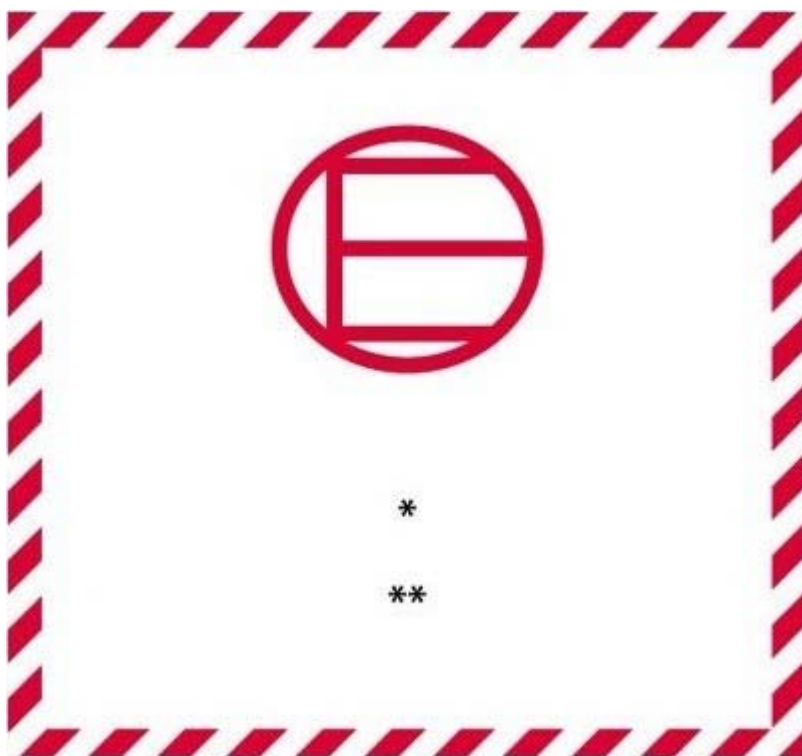


Fig. 8: Excepted quantities label

**The primary hazard class or, when assigned, the division number(s) must be legibly printed in english in this location.*

***The name of the shipper or of the consignee must be legibly printed in english in this location if not shown elsewhere on the package.*

c. Shipping Documents

For excepted quantities of dangerous goods, a shipper's declaration not required, nor is it necessary to include a commercial invoice or an itemized list of contents between the secondary container and outer package. The carrier's air waybill

must be filled out correctly to ensure that the package is not over-classified. An example of a completed FedEx air waybill is given below.

i. Sender/Receiver Names and Addresses (sections 1 and 3 in Fig. 9 below)

Complete the “from” and “to” information.

ii. Shipping Service (section 4 in Fig. 9 below)

Select the appropriate shipping service. Priority or overnight shipping is not required for excepted quantities.

iii. Packaging (section 5 in Fig. 9 below)

Select “other” packaging. FedEx does not allow dangerous goods, including excepted quantities, to be sent in FedEx packaging.

iv. Special Handling and Delivery Signature Options (section 6 in Fig. 9 below)

Shippers must consult with consignees concerning their internal procedures for receiving and processing packages, and complete this section accordingly.

v. Dangerous Goods Status (section 6 in Fig. 9 below)

Select the box marked “Yes, Shipper’s Declaration not required.” While excepted quantities are considered dangerous goods, a Shipper’s Declaration is not required if no other dangerous goods are present. Complete the section concerning dry ice if applicable.

IATA regulations require that the presence of excepted quantities be noted on the air waybill. This can be on any free space on the air bill, but the most space is available on the lilac portion on the upper right, for FedEx shipments. Text must be contiguous verbiage “Excepted Quantities of Dangerous Goods” (see figure below).

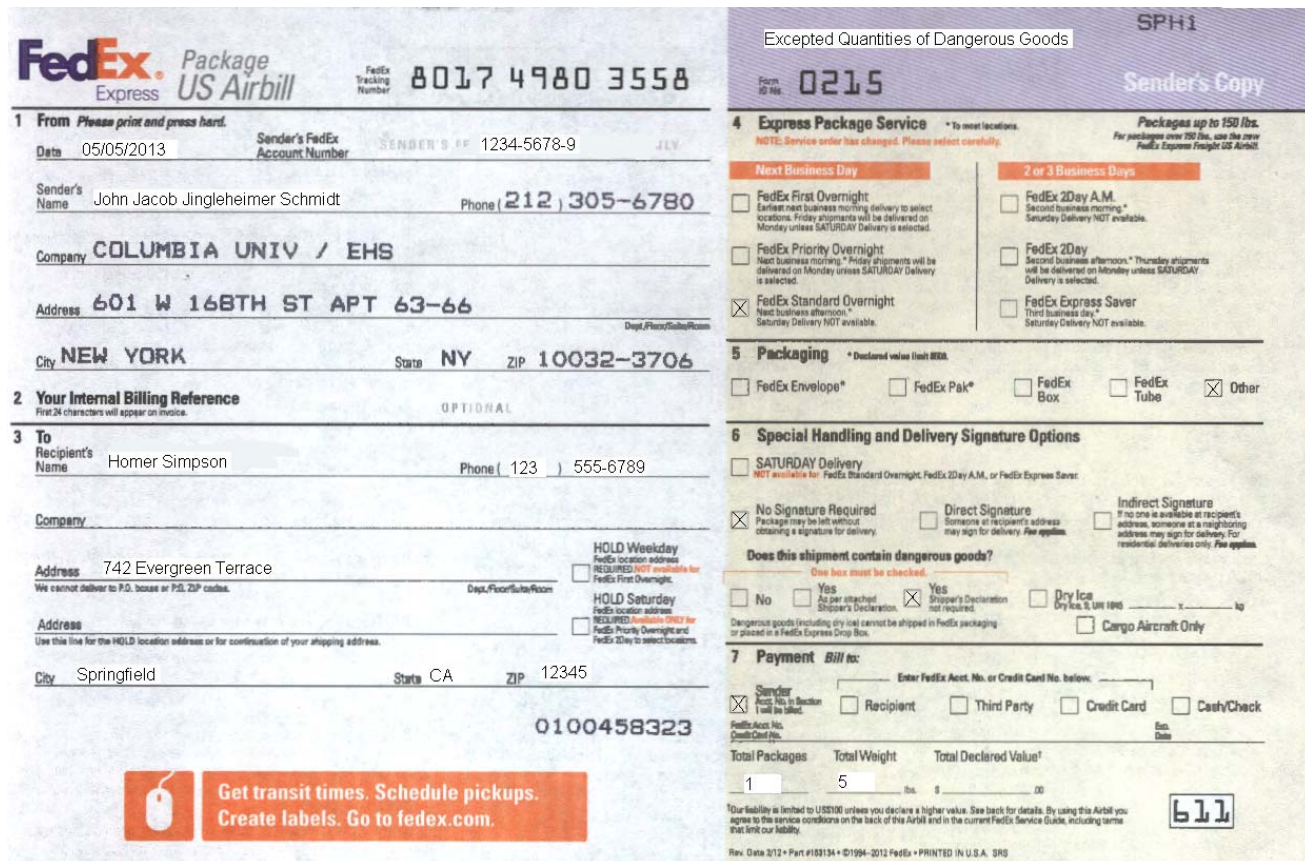
vi. Number of Packages (section 7 in Fig. 9 below)

Complete in accordance with the details of your shipment.

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Revised: 7/14/15



FedEx Package Express US Airbill FedEx Tracking Number: 8017 4980 3558

1 From Please print and press hard.
 Date: 05/05/2013 Sender's FedEx Account Number: 1234-5678-9
 Sender's Name: John Jacob Jingleheimer Schmidt Phone: (212) 305-6780
 Company: COLUMBIA UNIV / EHS
 Address: 601 W 168TH ST APT 63-66
 City: NEW YORK State: NY ZIP: 10032-3706

2 Your Internal Billing Reference (Optional)
 First 24 characters will appear on invoice.

3 To Recipient's Name Homer Simpson Phone: (123) 555-6789
 Company:
 Address: 742 Evergreen Terrace
 City: Springfield State: CA ZIP: 12345

4 Express Package Service *To meet locations. NOTE: Service order has changed. Please select carefully.
 Packages up to 150 lbs. For packages over 150 lbs, use the new FedEx Express Freight US Airbill.

Next Business Day
☐ FedEx First Overnight
☐ FedEx Priority Overnight
☒ FedEx Standard Overnight

2 or 3 Business Days
☐ FedEx 2Day A.M.
☐ FedEx 2Day
☐ FedEx Express Saver

5 Packaging *Declared value limit \$500.
☐ FedEx Envelope® ☐ FedEx Pak® ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options
☐ SATURDAY Delivery
☒ No Signature Required
☐ Direct Signature
☐ Indirect Signature
 Does this shipment contain dangerous goods?
☐ No ☒ Yes
 Dry Ice: 5, UN 1845, 1 kg

7 Payment Bill to:
☒ Sender ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

Total Packages: 1 Total Weight: 5 lbs. Total Declared Value: \$

Fig 9: Example of FedEx air waybill for shipment of excepted quantities of dangerous goods

6. Requirements for Shipping Biological Materials (Exempt Human or Animal Specimens and non-regulated materials)

a. Packaging requirements

As a general rule, any shipment containing biological materials, including those containing non-regulated materials, should be prepared under a standard triple-packaging scheme to withstand the normal shocks, temperature and pressure changes common during regular transport without leaking to the outside of the container. This packaging regimen should consist of:

i. Primary Receptacle

See section E.3: General Requirements for Packaging, Labeling, and Documentation.

ii. Secondary Container

See section **E.3: General Requirements for Packaging, Labeling, and Documentation.**

iii. Outer Package

See section **E.3: General Requirements for Packaging, Labeling, and Documentation.** Any durable box is acceptable for patient specimens. FedEx does make “clinical pack” packaging but this can only be used as an overpack for multiple small boxes; do not use regular FedEx packaging for primary containment of patient specimens.

b. Labels and Markings

Non-regulated biological materials do not require any special labels or markings on the outer package.

Packages with specimens meeting the definition of *exempt human or animal specimen* do not require any additional markings or labels, except that the following conditions must be met:

- i. The words “Exempt human specimen” or “Exempt animal specimen” must be clearly marked on the box as applicable, (self-adhesive label or handwritten is acceptable).



Fig. 10: Examples of pre-printed labels for shipment containing exempt human or animal specimens

- ii. The outer package must be clearly marked in english with the full names and addresses of both the shipper (“from”) and consignee (“to”).

c. Shipping Documents

For non-regulated biological materials or exempt human or animal specimens, a shipper's declaration is not required, nor is it necessary to include a commercial invoice or an itemized list of contents between the secondary container and outer package. The carrier's air waybill must be filled out correctly to ensure that the package is not over-classified. An example of a completed FedEx air waybill is given below.

i. Sender/Receiver Names and Addresses (sections 1 and 3 in Fig. 11 airbill below)

Complete the "from" and "to" information.

ii. Shipping Service (section 4 in Fig. 11 below)

Select the appropriate shipping service. Priority or overnight shipping is not required for exempt shipments.

iii. Packaging (section 5 in Fig. 11 below)

Select "other" packaging. FedEx does not allow biological materials to be sent in FedEx packaging.

iv. Special Handling and Delivery Signature Options (section 6 in Fig. 11 below)

Shippers must consult with consignees concerning their internal procedures for receiving and processing packages, and complete this section accordingly.

v. Dangerous Goods Status (section 6 in Fig. 11 below)

Select the box marked "No." Unregulated biological materials are not considered dangerous goods. Exempt human or animal specimens are not considered dangerous goods if properly packaged and marked as described above.

vi. Number of Packages (section 7 in Fig. 11 below)

Complete in accordance with the details of your shipment.

Biological Materials Shipping Manual

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Version: 1.4

Created: 1/10/14
Revised: 7/14/15



FedEx Express US Airbill Tracking Number: 8017 4980 3558

1 From Please print and press hard.
 Date: 05/05/2013 Sender's FedEx Account Number: 1234-5678-9
 Sender's Name: John Jacob Jingleheimer Schmidt Phone: (212) 305-6780
 Company: COLUMBIA UNIV / EHS
 Address: 601 W 168TH ST APT 63-66
 City: NEW YORK State: NY ZIP: 10032-3706

2 Your Internal Billing Reference (Optional)
 First 24 characters will appear on invoice.

3 To Recipient's
 Name: Homer Simpson Phone: (123) 555-6789
 Company:
 Address: 742 Evergreen Terrace
 City: Springfield State: CA ZIP: 12345

4 Express Package Service *To meet locations.
 NOTE: Service order has changed. Please select carefully.
 Packages up to 150 lbs. For packages over 150 lbs, use the new FedEx Express Freight US Airbill.

Next Business Day
☐ FedEx First Overnight
☐ FedEx Priority Overnight
☒ FedEx Standard Overnight

2 or 3 Business Days
☐ FedEx 2Day A.M.
☐ FedEx 2Day
☐ FedEx Express Saver

5 Packaging *Declared value limit \$500.
☐ FedEx Envelope® ☐ FedEx Pak® ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options
☐ SATURDAY Delivery
☒ No Signature Required
☐ Direct Signature
☐ Indirect Signature
 Does this shipment contain dangerous goods?
☒ No ☐ Yes
 Dry Ice: _____ kg

7 Payment Bill to:
☒ Sender ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

Total Packages: 1 Total Weight: 5 lbs. Total Declared Value: \$

Fig. 11: Example of FedEx air waybill for shipment of exempt human specimens

7. Requirements for Shipping Genetically Modified Organisms or Microorganisms (GMOs or GMMOs)

a. Packaging requirements

Shipments containing Genetically Modified Microorganisms (GMMOs) or Genetically Modified Organisms (GMOs) must be prepared in compliance with IATA Packing Instruction 959. This packing instruction adheres to the triple-packaging scheme required for all shipments of biological materials, but carries the additional requirement that the packing materials must be tested by the manufacturer and be shown to be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport, including transshipment between transport units and between transport units and warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packaging must be constructed and closed so as to prevent any loss of contents that might be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure.

These guidelines meet the requirements of Packing Instruction 959, though the shipper must obtain the appropriate certified packing materials from an approved packaging supplier (see Section **I.2 Appendix 2. – Packaging Suppliers**). If packaging meeting the requirements of Packing Instruction 959 is not available, packaging meeting equivalent standards, such as Packing Instruction 650 (Biological Substance, Category B) may be used.

i. Primary Receptacle

See section **E.3: General Requirements for Packaging, Labeling, and Documentation**.

ii. Secondary Container

See section **E.3: General Requirements for Packaging, Labeling, and Documentation**.

iii. Outer Package

See section **E.3: General Requirements for Packaging, Labeling, and Documentation**.

iv. Package testing requirements

The outer packaging is not required to display the UN rating stamp noting testing specifications, but shippers must confirm that packaging has been tested to meet the specifications of Packing Instruction 959, at a minimum. It is strongly recommended that shippers purchase packing materials that have been tested and certified by the vendor to meet the specifications and requirements of the IATA packing instructions (see **I.2: Appendix 2. – Packaging Suppliers**).

b. Labels and Markings

i. “UN3245” Label

- a. A “UN3245” Label must be affixed to the side of the package, unmarked and not obscured (see Fig. 12 below).
- b. Label must be self-adhesive, or pre-printed to the side of the outer package. Self-printed labels attached with clear tape are not acceptable.
- c. Label must be Oriented “on point,” upright and in diamond orientation (square set at 45 degrees).
- d. Label must be 2” x 2” in size.



Fig. 12: Image of UN 3245 label for shipments containing genetically modified microorganisms

ii. Sender/Receiver Names and Addresses

The outer package must be clearly labeled with the full names and addresses of both the shipper (“from”) and consignee (“to”).

c. Shipping Documents

For shipments containing GMMOs or GMOs, a Shipper’s Declaration is not required, nor is it necessary to include an itemized list of contents between the secondary container and outer package. The carrier’s air waybill must be filled out correctly to ensure that the package is not over-classified. An example of a completed FedEx air waybill is given below (Fig. 13).

i. Sender/Receiver Names and Addresses (sections 1 and 3 in Fig. 13 airbill below)

Complete the “from” and “to” information.

ii. Shipping Service (section 4 in Fig. 13 below)

Select the appropriate shipping service. Priority or overnight shipping is not required for GMMOs or GMOs.

iii. Packaging (section 5 in Fig. 13 below)

Select “other” packaging. FedEx does not allow GMMOs or GMOs to be sent in FedEx packaging.

iv. Special Handling and Delivery Signature Options (section 6 in Fig. 13 below)

Shippers must consult with consignees concerning their internal procedures for receiving and processing packages, and complete this section accordingly.

v. Dangerous Goods Status (section 6 in Fig. 13 below)

Select the box marked “Yes, Shipper’s Declaration not required.” While GMMOs and GMOs are considered dangerous goods, a Shipper’s Declaration is not required if no other dangerous goods are present. Complete the section concerning dry ice if applicable.

Packing Instruction 959 also requires that the nature of the goods (the proper shipping name) be provided. For GMMOs or GMOs, the proper shipping name should be included on the airway bill. This can be on any free space on the airway bill, but the most space is available on the lilac portion on the upper right, for FedEx shipments. Text must be contiguous verbiage “Genetically Modified Micro-organisms, UN3245” (see Fig. 13 below).

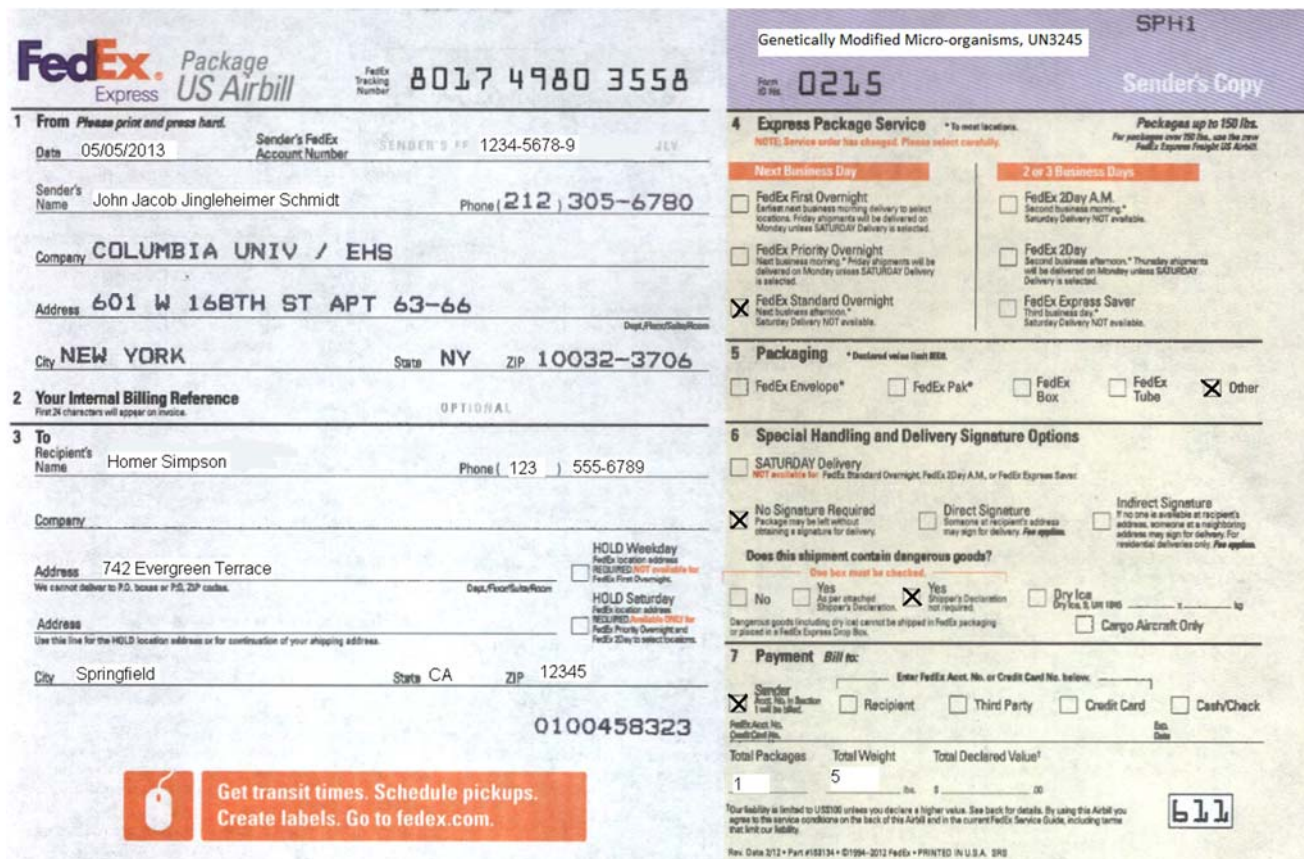
vi. Number of Packages (section 7 in Fig. 13 below)

Complete in accordance with the details of your shipment.

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FedEx Express Package US Airbill Tracking Number: 8017 4980 3558

1 From Please print and press hard.
 Date: 05/05/2013
 Sender's Name: John Jacob Jingleheimer Schmidt
 Company: COLUMBIA UNIV / EHS
 Address: 601 W 168TH ST APT 63-66
 City: NEW YORK State: NY ZIP: 10032-3706

2 Your Internal Billing Reference
 OPTIONAL

3 To
 Recipient's Name: Homer Simpson
 Company:
 Address: 742 Evergreen Terrace
 City: Springfield State: CA ZIP: 12345

4 Express Package Service
 Next Business Day:
☐ FedEx First Overnight
☐ FedEx Priority Overnight
☒ FedEx Standard Overnight
 2 or 3 Business Days:
☐ FedEx 2Day A.M.
☐ FedEx 2Day
☐ FedEx Express Saver

5 Packaging
☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☒ Other

6 Special Handling and Delivery Signature Options
☐ SATURDAY Delivery
☒ No Signature Required
☐ Direct Signature
☐ Indirect Signature
 Does this shipment contain dangerous goods?
☐ No ☒ Yes
 Dry Ice: _____ kg

7 Payment Bill to:
☒ Sender ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

0100458323

Get transit times. Schedule pickups. Create labels. Go to fedex.com.

Fig. 13: Example of FedEx air waybill for shipment containing Genetically Modified Microorganisms

8. Requirements for Shipping Biological Substances, Category B

a. Packaging requirements

Shipments containing Biological Substance, Category B must be prepared in compliance with IATA Packing Instruction 650. This packing instruction adheres to the triple-packaging scheme required for all shipments of biological materials (see section **E.3: General Requirements for Packaging, Labeling, and Documentation**), but carries the additional requirement that the packing materials must be tested by the manufacturer and be shown to be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between transport units and between transport units and warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings must be constructed and closed so as to prevent any loss of contents that might be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure.

These guidelines meet the requirements of Packing Instruction 650; the shipper must obtain the appropriate certified packing materials from an approved packaging supplier (see **Appendix 2. – Packaging Suppliers**). If packaging meeting the requirements of Packing Instruction 650 are not available, packaging meeting the more rigorous standards of Packing Instruction 620 (Infectious Substance, Category A) may be used, provided that all labeling and marking requirements of Packing Instruction 650, outlined below, are followed.

i. Quantity Limits

Shipments containing Biological Substances, Category B must not contain primary receptacles in excess of 1 L of liquid or 4 kg of solid materials. The outer package must not contain a quantity of material in excess of 4 L of liquid or 4 kg of solid materials. These limitations do not apply to body parts, organs, or whole bodies if packaged according to these guidelines.

ii. Pressure Testing

The primary receptacle or the secondary packaging must be must be capable of withstanding, without leakage, an internal pressure producing a pressure differential of not less than 95 kPa (0.95 bar, 13.8 lb/in²) and temperatures in the range of -40°C to 55°C (-40°F to 130°F). The shipper must ensure that the primary or secondary packaging has been tested to meet this standard by the manufacturer. The packaging must be specifically marked “95 kPa.” Ziplock bags or other unlabeled containers that are not designed to this standard are unacceptable.



Fig. 14: Example of a commercially available pressure-rated secondary receptacle

iii. Primary Receptacle

See section **E.3: General Requirements for Packaging, Labeling, and Documentation.**

iv. Secondary Container

Secondary packaging must likewise be leak-proof if any liquid component is present and sift-proof if only solids are shipped. Sufficient absorbent material must be placed between the primary receptacles and the secondary container to absorb the entire contents of the package. The absorbent material must be capable of preventing an escape of any material to the outside of the secondary container without compromising any cushioning materials.

v. Outer Package

Outer packages must be of rigid construction, consisting of a material adequate for the package capacity, mass and intended use. The smallest external dimension allowed on the outer package must be at least 100 mm in order to bear all required labels and markings.

b. Labels and Markings**i. “UN3373” Label**

- a.** A “UN3373” label must be affixed to the side of the package, unmarked and not obscured.
- b.** Label must be self-adhesive, or pre-printed to the side of the outer package. Self-printed labels attached with clear tape are not acceptable.
- c.** Label must be displayed “on point,” upright and in diamond orientation (square set at 45 degrees).
- d.** Label must be 2” x 2” in size. Letters and numbers must be at least 6mm tall and the diamond lines must be at least 2 mm thick.



Fig. 15: Image of UN 3373 label for packages containing Biological Substances, Category B



Fig. 16: Hazmat packages should not be labeled with the international biohazard symbol. This is not a recognized hazmat shipping label or marking and its similarity to a Category A infectious material symbol may only serve to confuse the carrier and lead to return of packages that do not meet other Category A requirements.

ii. Sender/Receiver Names and Addresses

The outer package must be clearly marked with the full names and addresses of both the shipper (“from”) and consignee (“to”).

iii. Responsible Person

The outer package must be clearly marked with the name and phone number of a person with first-hand knowledge of the materials being shipped who has received appropriate training on the shipment of dangerous goods.

iv. Shipping Name

The package must be clearly marked in legible english with indelible ink with the proper shipping name, the words “Biological Substances, Category B” in letters at least 6 mm high, adjacent to the diamond-shaped “UN3373” label. Some “UN3373” labels come with this phrase pre-printed to meet this requirement. Abbreviations or variations in spelling are strictly prohibited.

v. Orientation Arrows

- vi. If 50 ml or more of Category B liquids are being shipped, the shipper is required to affix package orientation arrows on opposite sides of the outer package. These labels must be self-adhesive, or pre-printed to the side of the outer package. Self-printed labels attached with clear tape are not acceptable.

c. Shipping Documents

For shipments containing Category B materials, a Shipper’s Declaration is not required. The carrier’s air waybill must be filled out correctly to ensure that the package is not over-classified. An example of a completed FedEx air waybill is given below (Fig. 17).

An itemized list of contents (or commercial invoice) is required. The regulations do not specify how the list of contents should be detailed or formatted. There is no specific form that needs to be used. It is up to the shipper to decide how to identify the contents of the package, but aim to be as specific as possible (e.g. 4 x 1 ml screw-top vials containing *Staphylococcus aureus*). A commercial invoice can be used to meet this requirement (see <http://ehs.columbia.edu/CommercialInvoice.pdf>). Complete and enclose between secondary and outer packing.

i. Sender/Receiver Names and Addresses (sections 1 and 3 in Fig. 17 below)

Complete the “from” and “to” information.

ii. Shipping Service (section 4 in Fig. 17 below)

Shippers are required to use the fastest available shipping service.

iii. Packaging (section 5 in Fig. 17 below)

Select “other” packaging. FedEx does not allow Category B materials to be sent in FedEx packaging.

iv. Special Handling and Delivery Signature Options (section 6 in Fig. 17 below)

Shippers must select the option for direct signature.

v. Dangerous Goods Status (section 6 in Fig. 17 below)

Select the box marked “Yes, Shipper’s Declaration not required.” While Category B materials are considered dangerous goods, a Shipper’s Declaration is not required if no other dangerous goods are present. Complete the section concerning dry ice, if applicable.

Packing Instruction 650 also requires that the nature of the goods (the proper shipping name) be provided. For Category B materials, the proper shipping name should be included on the airway bill. This can be on any free space on the air bill, but the most space is available on the lilac portion on the upper right, for FedEx shipments. Text must be contiguous verbiage “Biological Substance, Category B, UN3373” (see Fig. 17 below).

vi. Number of Packages (section 7 in Fig. 17 below)

Complete in accordance with the details of your shipment.

vii. Itemized list of contents

An itemized list of contents must be enclosed between the secondary packaging and the outer container. A commercial invoice may be used to fulfill this requirement (template available at <http://ehs.columbia.edu/CommercialInvoice.pdf>)

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 First 24 characters will appear on invoice. OPTIONAL

3 To Recipient's Name Homer Simpson Phone: (123) 555-6789
 Company:
 Address: 742 Evergreen Terrace
 City: Springfield State: CA ZIP: 12345

4 Express Package Service * To meet locations. Packages up to 150 lbs.
 NOTE: Service order has changed. Please select carefully.
 Next Business Day: ☐ FedEx First Overnight, ☒ FedEx Priority Overnight, ☐ FedEx Standard Overnight
 2 or 3 Business Days: ☐ FedEx 2Day A.M., ☐ FedEx 2Day, ☐ FedEx Express Saver

5 Packaging * Declared value limit \$500.
☐ FedEx Envelope*, ☐ FedEx Pak*, ☐ FedEx Box, ☐ FedEx Tube, ☒ Other

6 Special Handling and Delivery Signature Options
☐ SATURDAY Delivery
☐ No Signature Required, ☒ Direct Signature, ☐ Indirect Signature
 Does this shipment contain dangerous goods? ☐ No, ☒ Yes (per attached Shipper's Declaration)
 Dry Ice: ☐ Dry Ice, ☐ Dry Ice, ☐ Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below:
☒ Shipper, ☐ Recipient, ☐ Third Party, ☐ Credit Card, ☐ Cash/Check

Total Packages: 1 Total Weight: 5 lbs. Total Declared Value: \$

0100458323

Get transit times. Schedule pickups. Create labels. Go to fedex.com.

Fig. 17: Example of FedEx air waybill for shipment containing Biological Substances, Category B

9. Requirements for Shipping Infectious Substances, Category A

Columbia University policy prohibits laboratory personnel from preparing shipments of Category A materials without direct assistance from Environmental Health & Safety. For assistance with a Category A shipment, please use the Intent to Ship Hazardous Materials Form (<http://ehs.columbia.edu/IntentToShipHazardousMaterialsForm.pdf>). A list of Category A substances is provided in **Appendix 1**.

10. Security

USDOT and IATA regulations require that the shipper ensure the security of all packages containing dangerous goods. Packages containing dangerous good must remain under the supervision of a trained *hazardous materials employee* until given to the courier. This requirement effectively prohibits the dropping off of dangerous goods packages at unattended drop box locations, including those containing dry ice. Laboratories must schedule for FedEx to pick up packages directly from the laboratory, or may leave packages in a central collection area or office provided that the packages remain under the supervision of a trained hazardous materials employee. The exception

is for small UN3373 packages shipped in a FedEx over pack that may be deposited inside the FedEx drop box.



Fig. 18: Example of FedEx UN3373 over pack containing Biological Substances, Category B

11. International Shipments

It is strongly recommended that shippers use FedEx. Shippers may also use UPS or World Courier, though there may be restrictions on the categories of shipments that are accepted.

- a. Shipper should call FedEx International Services prior to preparing the package and provide the street address of the consignee. Information will be provided regarding which days of the week FedEx carries to that particular destination. FedEx may not be able to deliver directly to the consignee; the consignee may have to travel to the airport to collect the package. FedEx will be able to provide an estimate and what the cost will be. For international shipments on dry ice, costs can run to hundreds of dollars. Someone in the lab must hand the package to a FedEx representative. The package must not be left unattended at any time or with an untrained employee.
- b. International shipments must clear customs in the destination country. A customs broker can assist with this process. For most countries, FedEx can act as the customs broker. However, in countries where they do not act as the customs broker, an independent customs broker must be contracted in advance. It is typically easier for the consignee to coordinate this part of the process unless the shipper is comfortable doing so.
- c. Two documents are required in all cases:
 - i. FedEx international air waybill. This form is available by contacting FedEx or by visiting some FedEx kiosks or drop-off locations.
 - ii. A commercial invoice is required (<http://ehs.columbia.edu/CommercialInvoice.pdf>). It should accurately state what is being shipped (e.g. human cell lines, monoclonal

antibodies, mouse brains) and state that the materials are for biomedical research. If applicable, transcribe this verbiage: ALL NON-REGULATED BIOLOGICAL MATERIALS FOR BIOMEDICAL RESEARCH - NON-HAZARDOUS MATERIAL. A value has to be assigned to the shipment. Human and animal specimens have significant intellectual value but negligible commercial value. You can declare a value up to \$2500 and be exempt but most people declare at \$1. For commercial products such as therapeutic agents and purchased antibodies an accurate estimate of the value should be made. More complete instructions on how to complete a commercial invoice are in **Appendix 4** of this Procedure.

- iii. If shipping with FedEx, it is recommended that their *Declaration of Biological Shipments* form (see **Appendix 3**) be used for this (<http://ehs.columbia.edu/FedExDeclarationOfBiologicalShipments.pdf>)
- d. An import permit may also be required in the destination country. It is better to work with the consignee to obtain this before the package ships so a copy can be included in the box.
- e. Prepare multiple copies of the FedEx air waybill, commercial invoice and any permits. To preclude the package being opened and closed repeatedly, place 4 copies along with the airway bill in the clear plastic sleeve and a copy inside the box between the fiberboard and the secondary container.
- f. The shipper must keep copies of all paperwork, including the airway bill and permits for at least three years.
- g. If dry ice is used as a preservative, all packaging and labeling requirements must be met. Ensure that enough dry ice is included, with a rule of thumb being 3 kg per anticipated day of transit. Include no less than a seven day supply of dry ice. Anticipate a delay in customs that may take several days and shipping delays due to weekends. Shipping on a Monday provides the advantage of five consecutive business days for transit.

12. Inter-campus transport of biological materials

EH&S has worked with the Office of Risk Management to revise a University policy that previously prohibited inter-campus transport of biological materials by researchers. With the approaching opening of the Jerome Green Science Center and the nature of its extensive collaborations with investigators on the Morningside and Medical Center campuses, there was a need to come up with a pragmatic approach to investigator-mediated inter-campus transport.

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Transport is limited to University-owned or contracted vehicles/shuttle buses, licensed taxi cabs or personal vehicles (NOT on public transport such as MTA buses and subways). If transported in personal vehicle, check with your insurance carrier that this activity is covered.

The revised policy permits certain specific classifications of biological materials with low or no risk that are NOT classified as hazardous materials/dangerous goods by the Department of Transportation when transported by road: Exempt human/animal specimen, Non-regulated biological material, Preserved Biologicals and Dry ice are PERMITTED. Category A infectious substances and Biological substance Category B are NOT PERMITTED. Transport of materials containing other dangerous goods (radioactive or chemical hazards) are not permitted.

The policy only pertains to inter-campus transport between Columbia campuses. Investigators should not self-transport their biological materials to and from other institutions. Transport must be direct from campus to campus (no stops or detours). Package must stay in custody of shipper throughout transport and delivered on the same day.

The same rigor should apply to preparing a package for inter-campus transport as one prepared for transport by a professional courier such as FedEx. This includes the requirement that biological materials are triple performance packaged and pose no hazard to other passengers even if the package should break open in transit. Dry ice should be enclosed in a Styrofoam container.

Shipper must bring a pair of disposable nitrile or latex gloves in their pocket or bag. These are to be donned ONLY in the event that the package is compromised, e.g. leaks. They are NOT to be used to carry the package.

A training and certification course must be taken prior to transporting any materials between campuses. The applicable RASCAL training center course is TC0076 - Shipping with Dry Ice, Exempt Specimens and Excepted Quantities of Dangerous Goods.

See Figure 19 below for specifics and conditions. If you have any questions please contact a biosafety officer (biosafety@columbia.edu).

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Material	Category A infectious substance	Biological substance Category B	Exempt human/animal specimen	Non-regulated biological material	Preserved Biologicals	Dry ice
Example	Ebola virus. M. tuberculosis	HIV-infected blood specimens. Blood for infectious disease testing. Cultures of infectious material; MRSA, herpes simplex	Blood specimens with low likelihood of infectious materials. Urine. Mouse brains. Cell lines.	DNA samples. Antibodies	Formalin (10%)-preserved tissue. Ethanol-preserved tissue	
DOT-Hazmat by ground?	Yes	Yes	No	No	No restrictions at low volume and concentration	No
Risk	High	Medium	Low	None	Low	Low
University vehicle - Shuttle bus, Public Safety	Not permitted	Not permitted	Permitted	Permitted	Permitted	Permitted
Personal vehicle	Not permitted	Not permitted	Permitted	Permitted	Permitted	Permitted
Taxi cab	Not permitted	Not permitted	Permitted	Permitted	Permitted	Permitted
Mass transit (MTA) -	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted
Notes	Use a professional dangerous goods courier such as FedEx.		Materials must be triple-performance packaged.		Only permitted at DOT-exempt amounts. Formaldehyde concentration not to exceed 3.75%. Volume per tube not to exceed 30 ml. Materials must be triple-performance packaged.	Dry ice must be packaged according to DOT specs (insulated, gas-ventable container).
Required training	EH&S is responsible for preparing compliant Category A shipments. No faculty, student, or staff member, regardless of training status, is certified by EH&S to ship Category A substances.	Shipper must also be DOT/IATA-trained	Shipper must be DOT/IATA-trained (RASCAL TC0507)		Shipper must be DOT/IATA-trained (RASCAL TC0076)	
Conditions			<ul style="list-style-type: none">• Transport must be direct from campus to campus (no stops or detours).• Package must stay in custody of shipper throughout transport and delivered on the same day.• Shipper must bring a pair of disposable nitrile or latex gloves in their pocket or bag. These are to be donned ONLY in the event that the package is compromised, e.g. leaks. They are NOT to be used to carry the package.• Transport of materials containing other dangerous goods (radioactive or chemical hazards) are not permitted• If transported in personal vehicle, check with your insurance carrier that this activity is covered.			
Sanctions	Improper transport of hazardous materials can lead to serious injuries, University property damage/loss, and personal property damage/loss. Injuries or accidents resulting from disregard for proper packaging, marking, or communication outlined by this MOT exemption document can result in inspection and citations by regulatory agencies, including DOT or OSHA. All penalties or fines are the responsibility of the University department in which the infraction occurred. Grant funding may not be used to pay regulatory fines or penalties. Civil and criminal penalties may result from the improper transportation of hazardous materials, type and quantity.					

Fig. 19: Policy on inter-campus transport of biological materials.

F. Emergency contacts

Public Safety Morningside: 212-854-2797, Emergency: 212-854-5555
Public Safety Medical Center: 212-305-8100, Emergency: 212-305-7979
EH&S Morningside: 212-854-8749

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EH&S Medical Center: 212-305-6780

Locations and contact info for health care providers:

<http://www.ehs.columbia.edu/WhereToGoForMedicalAttention1.pdf>

G. Medical Surveillance

N/A

H. Recordkeeping

Shippers are required to retain all documentation related to shipping of dangerous goods for a minimum of two years.

I. Appendices

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Appendix 1. - Examples of Category A Infectious Substances

*Examples given are not all-inclusive, and are merely indicative of the criteria used to classify a material. Any infectious substances that meet these criteria (see **E.2.a: Classification**), including new or emerging pathogens, must be included in Category A for the purposes of transportation.*

Infectious Substances, Affecting Humans, UN2814

Bacillus anthracis (cultures only)
Brucella abortus (cultures only)
Brucella melitensis (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 hemorrhagic fever virus
Dengue virus (cultures only)
Eastern equine encephalitis virus (cultures only)
Ebola virus
Escherichia coli, verotoxigenic (cultures only)
Flexal virus
Francisella tularensis (cultures only)
Guanarito virus
Hantaan virus
Hantavirus causing hemorrhagic fever with renal
syndrome
Hendra virus
Hepatitis B virus (cultures only)
Herpes B virus (cultures only)
Highly pathogenic avian influenza (cultures only)
Human immunodeficiency virus (cultures only)
Japanese encephalitis virus (cultures only)
Junin virus
Kyasanur Forest disease virus
Lassa virus
Machupo virus
Marburg virus
Monkeypox virus
Mycobacterium tuberculosis (cultures only)

Nipah virus
Omsk hemorrhagic fever virus
Poliovirus (cultures only)
Rabies virus (cultures only)
Rickettsia prowazekii (cultures only)
Rickettsia rickettsia (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)
West Nile virus (cultures only)
Yellow fever virus (cultures only)
Yersinia pestis (cultures only)

Infectious Substances, Affecting Animals, UN2900

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)

Appendix 2. – Packaging Suppliers

None of the below suppliers are specifically endorsed by EH&S.

Air Sea Atlanta

Phone: (404) 351-8600

<http://www.airseatlanta.com>**HAZPlus (C.L. Smith)**

(866) 586-6786

<http://www.clsmith.com/hazplus>**All Pak, Inc.**

Phone: (678) 819-3829

<http://www.allpakinc.com/>**Inmark, Inc.**

Phone: (800) 646-6275

<http://www.inmarkinc.com>**Berlin Packaging**

Phone: (800) 229-7546

<http://www.berlinpackaging.com>**Lab Safety Supply (Grainger)**

Phone: (800) 536-0783

<http://www.labsafety.com>**DG Supplies, Inc.**

Phone: (800) 347-7879

<http://www.dgsupplies.com>**Saf-T-Pak, Inc.**

Phone: (800) 814-7484

<http://www.saftpak.com>**EXAKT Technologies, Inc.**

Phone: (800) 866-7172

<http://www.exaktpak.com>**Therapak Corporation.**

Phone: (888) 505-7377

<http://www.therapak.com>**Fisher Scientific**

Phone: (800) 766-7000

<http://www.fishersci.com>**ThermoSafe Brands**

Phone: (800) 323-7442

<http://www.thermosafe.com>**HAZMATPAC, Inc.**

Phone: (800) 923-9123

<http://www.hazmatpac.com>**VWR Scientific**

Phone: (800) 932-5000

<http://www.vwrsp.com>

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Appendix 3. – FedEx Biological Shipments Form

Declaration of Biological Shipments

Please complete this form to assist FedEx to provide timely clearance of biological shipments into this country.

Air Waybill # _____	Number of Containers _____ Total No. of Pkgs _____
Shipper: _____	Consignee: _____
_____	_____
_____	Registration # _____ Permit # _____
Fax: _____ Phone: _____	Fax: _____ Phone: _____
FedEx Acct No: _____	FedEx Acct No: _____

Reason for export: Sample for lab research _____ For human consumption/use _____ Not for human consumption/use _____

The above shipment contains (please check all that apply):

___ **Human** Qty in Milliliters _____ LOT Number _____ Control Number _____
 ___ **Infectious** ___ **Non- Infectious** ___ **blood** ___ **serum** ___ **plasma**
 ___ **Parts of the human body** (bones, tissues, organs, hairs etc.) (*) _____

___ **Animal** Name of Animal _____ / Species _____ Qty in Milliliters _____
 ___ **blood** ___ **serum** ___ **plasma**
 ___ **Parts of animal bodies** (bones, tissue, organs, coat etc.) (*) _____

___ **Biological specimen(s)** with origin of: *(Require a health certificate and an import license)*

bovine _____ sheep _____ goat _____
 pig _____ chicken _____ horse _____

Health Certificate Attached: _____ Importer's License or Permit Number: _____

___ **Biological specimen(s)** containing **hamster, rabbit, rat, mouse, monkey, canine, or feline**-Please provide the specific description of the specimen, (i.e. rabbit monoclonal antibodies).

hamster _____ rabbit _____ rat _____
 mouse _____ canine _____ feline _____
 monkey _____

___ **Diagnostic specimen (reagents)** not containing psychotropic substances and drugs.

___ these reagents are not used for detection of HIV, HBSAG, HCV.
 ___ these reagents are not perishable and/or potentially infectious biologicals.
 ___ non infectious (biological) diagnostic specimen. (+)
 ___ diagnostic reagents contain animal or plant product (**)

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____ **Other** – If you specimen is not covered by the previous categories please provide complete description of the specimen including details relating to its origin.

Description _____

Notes

(*) Please provide specific description, indicate the part of the body from which obtained.

(+) A purple label reporting “Materies biologiques perissables” must be put on each package.

(**) Please provide source material (plant or animal name) if reagents contain any plant or animal product.

Parts of animal bodies: Provide complete description of the part; including name of the animal (*)

Please provide source material (plant or animal name) if reagents contain any plant or animal product.()**

Description of the packaging _____

FedEx packaging cannot be used for transport of these type goods.

Special Handling(++) (select one)

Freeze (-20C) ☐

Keep Cool (+2-8C) ☐

Room Temperature ☐

Declarants Name (print) _____

Declarants Signature _____

Declarants Capacity/ Title _____

Date _____

Emergency Contact Name : _____ **Email** _____ **@** _____

Phone _____ **/ Fax** _____

Blood, urine and other liquid diagnostic specimens containing infectious substances are considered Dangerous Goods. (See [Dangerous Goods](#).) IATA regulations apply. NOTE: Regulated Infectious Substances must not be shipped in Diagnostic Specimen Envelopes. (See [Packaging and Marking](#).) Non-infectious blood, urine and diagnostic specimens must be packaged to specific FedEx standards. For additional information on FedEx standards for diagnostic specimens, visit our Web site at www.fedex.com or request our brochure for blood, urine and diagnostic samples.

(++) Completion of this information does not guarantee that this shipment will be stored or housed in climate controlled environment and is not intended to confer added liability on FedEx. For complete terms of service and liability consult FedEx Service Guide or visit www.fedex.com.

Appendix 4. – How to complete a Commercial Invoice.

The purpose of the Commercial Invoice is to fully and accurately document:

- The goods you are shipping.
- All parties related to the sale and shipment of the goods.
- The shipping details.
- Invoice charges and instructions specific to the transaction of goods in the shipment.

A complete and accurate Commercial Invoice will facilitate problem-free movement of your shipment across international borders.

This fillable template is available at <http://ehs.columbia.edu/CommercialInvoice.pdf>

The guide below explains how to complete each of the numbered sections. Note on the form that some sections are marked OPTIONAL

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Commercial Invoice

<p>1 Shipper/Exporter</p> <p>Tax ID No. _____</p> <p>Contact Name A _____</p> <p>Contact Phone _____</p> <p>Email _____</p> <p>Company Name _____</p> <p>Address 1 _____</p> <p>Address 2 _____</p> <p>City _____ State _____ ZIP _____</p> <p>Country _____</p> <p>2 Parties to Transactions: <input type="checkbox"/> Related or <input type="checkbox"/> Non-related</p> <p>7 Recipient</p> <p>Tax ID No. B _____</p> <p>Contact Name _____</p> <p>Contact Phone _____</p> <p>Email _____</p> <p>Company Name _____</p> <p>Address 1 _____</p> <p>Address 2 _____</p> <p>City _____ Province _____ Postal Code _____</p> <p>Country _____</p>	<p>3 Ship Date _____</p> <p>4 Air Waybill No./Tracking No./Bill of Lading</p> <p>C _____</p> <p>_____</p> <p>_____</p> <p>5 Reference No. (e.g., purchase order, invoice no.) _____</p> <p>6 Purpose of Shipment _____</p> <p>8 Importer - if other than recipient</p> <p><input type="checkbox"/> Same as RECIPIENT</p> <p>Tax ID No. _____</p> <p>Contact Name _____</p> <p>Contact Phone _____</p> <p>Company Name _____</p> <p>Address 1 _____</p> <p>Address 2 _____</p> <p>City _____ Province _____ Postal Code _____</p> <p>Country _____</p>																																																																				
<p align="center">9 Broker Information</p> <p>International shipments must clear customs in the destination country. A customs broker can assist with this process. For most countries, FedEx can act as the customs broker. However, in countries where they do not act as the customs broker, an independent customs broker must be contracted in advance. If this is the case, provide contact information for the broker on the Air Waybill. D</p>																																																																					
<p>10 Duties and taxes payable by: <input type="checkbox"/> Shipper <input type="checkbox"/> Recipient <input type="checkbox"/> Other If other, please provide FedEx Account Number _____</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>11 No. of Pkgs</th> <th>12 No. of Units</th> <th>13 Unit of Measure</th> <th>14 Description of Goods</th> <th>15 Harmonized Code</th> <th>16 Country of Origin</th> <th>17 Unit Value</th> <th>18 Total Value</th> </tr> </thead> <tbody> <tr> <td>E</td> <td></td> <td></td> <td>F</td> <td></td> <td></td> <td></td> <td>G</td> </tr> <tr> <td colspan="3">19 Total Pkgs</td> <td colspan="3">20 Total Weight (Indicate lbs. or kg)</td> <td colspan="2">Subtotal</td> </tr> <tr> <td colspan="4">21 Terms of Sale</td> <td colspan="2">OPTIONAL Insurance</td> <td colspan="2"></td> </tr> <tr> <td colspan="4">22 Special Instructions</td> <td colspan="2">OPTIONAL Freight</td> <td colspan="2"></td> </tr> <tr> <td colspan="4" rowspan="4">H</td> <td colspan="2">OPTIONAL Packing</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">OPTIONAL Handling</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">OPTIONAL Other</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">23 Invoice Total</td> <td colspan="2"></td> </tr> <tr> <td colspan="4"></td> <td colspan="2">24 Currency Code</td> <td colspan="2"></td> </tr> </tbody> </table> <p>25 These commodities, technology, or software were exported from the United States in accordance with U.S. Administration regulations. Diversion contrary to U.S. law prohibited.</p> <p>I declare all the information contained in this invoice to be true and correct. I</p> <p>Signature and Title of Authorized Person _____ Date _____</p> <p>M-11054 REV 7/10 Part 110547 PRD 0002788PM</p>		11 No. of Pkgs	12 No. of Units	13 Unit of Measure	14 Description of Goods	15 Harmonized Code	16 Country of Origin	17 Unit Value	18 Total Value	E			F				G	19 Total Pkgs			20 Total Weight (Indicate lbs. or kg)			Subtotal		21 Terms of Sale				OPTIONAL Insurance				22 Special Instructions				OPTIONAL Freight				H				OPTIONAL Packing				OPTIONAL Handling				OPTIONAL Other				23 Invoice Total								24 Currency Code			
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Close x

A

The **Exporter** is the person or organization sending the shipment.

Complete all specified information. Please note:

- **Tax ID#:** _____
A U.S. tax ID number or Employer Identification Number (EIN)
- **Telephone No. and Email:** _____
To facilitate contact if there are any problems with your shipment.
- **Parties to Transaction:** _____
Check "Related" if the exporter and consignee have a business connection.

● **EXPORTER:**

● **Tax ID#:** 985-83-8167

Contact Name: Sample McSample

● **Telephone No.:** 269-345-1567

Email: sample@mcsample.com

Company Name/Address:
McSample Ltd.
3245 S. Westnedge Ave.
Portage, MI 49834

Country: United States of America

● **Parties to Transaction:**
☐ Related ☒ Non-Related

Data provided for example purposes only.

Close x

B

The **Consignee** is the person or organization to whom the shipment is being sent.

Complete all specified information. Please note:

- **Tax ID#:** _____
Required for some countries to ensure customs clearance.
- **Telephone No. and Email:** _____
To facilitate contact if there are any problems with your shipment.

● **CONSIGNEE:** Recipient Jones

● **Tax ID#:** GB123456789000

Contact Name: Recipient Jones

● **Telephone No.:** 909-89-4521

Email: rjones@acme.com

Company Name/Address:
Acme Inc.
49 Stone Street
London, England
EC1Y 8SY

Country: United Kingdom

Data provided for example purposes only.

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Close x

The information in this section is intended primarily to help the shipper keep track of internal information related to the shipment. However, completing this information can also help with successful and efficient delivery of the shipment:

- **Air Waybill No., Tracking No. and Bill of Lading:**
Providing at least one of these numbers offers a backup for shipment identification, in the event that paper ID is stripped from the shipment in transit.
- **Invoice No., Purchase Order No. and Payment Terms:**
Refer to the shipper's internal information related to the shipment.
- **Purpose of Shipment:**
Correctly identifying the purpose of your shipment can help customs. For example, "commercial," "business," "gift," etc.

Ship Date: September 1, 2011

● **Air Waybill No. / Tracking No.:** 7979-7777-9999

● **Invoice No.:** 68-8866 **Purchase Order No.:**

● **Payment Terms:** ExWorks ● **Bill of Lading:**

● **Purpose of Shipment:** Commercial

Data provided for example purposes only.

C

Close x

Leave these items blank if you intend to have FedEx serve as your broker. That information will appear automatically in your "Shipping Info" when your shipment is processed by FedEx.

If you choose your own broker, please provide complete and accurate information in this section to ensure customs clearance.

● If there is a designated individual for this shipment, please provide contact information.

Name of Broker _____ Full Name _____ Contact Name _____

Address and Town/Province/State _____ Country _____ Other _____ If Other, please specify _____

Data provided for example purposes only.

D

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Close x

No. of Packages	No. of Units	Unit of Measure
10	30	lbs.

Data provided for example purposes only.

No. of Packages: _____
Refers to the separate pieces within a single, larger shipment.

No. of Units: _____
Refers to the number of separate commodities within the shipment (e.g., 1,200 widgets, 73 pairs of shoes, etc.).

Unit of Measure: _____
Should be appropriate to the items shipped (e.g., lbs., kg, and inches, but also "pairs" for shoes, etc.).

E

Close x

Description of Goods	Harmonized Tariff Number	Country of Origin
T-shirts, men's, 100% cotton	6205.30.000000	U.S.

Data provided for example purposes only.

Description of Goods: _____
To ensure customs clearance, it is extremely important that you include a detailed description of the goods you are shipping. A good description will answer the questions:

- What is it?
- What is it made of?
- Where and how will it be used?

For instance, do not write "pharmaceutical samples." Write "400 one-dose physician samples of [drug name] affixed to cardboard booklets containing product messaging and legally required information."

Harmonized Tariff Number: _____
It is strongly recommended that you include this standardized identification number for the type of goods you are shipping. You can look up the correct number on FedEx® Global Trade Manager.

Country of Origin: _____
This is the country in which the goods being shipped were manufactured, which may be different from the country you are shipping from. This information is important, because preferential trade agreements may affect the duties and taxes assessed on your shipment, based on country of origin/manufacture.

F

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G

This section provides room for you to itemize all costs/charges associated with your sale of the items being shipped. It is essentially your invoice to the consignee. **Fill in only those costs that you intend to charge to the consignee.**

Unit Value and Total Value are required for customs purposes.

Be sure to indicate the **Currency Code** for your transaction, for proper valuation of your shipment and to avoid ambiguity in your invoice.

Unit Value	Total Value
5.00	150.00
Subtotal:	150.00
Insurance:	25.00
Freight:	50.00
Packing:	20.00
Handling:	10.00
Other:	
Invoice Total:	255.00
Currency Code:	USD

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Close x

This is the place to add any additional instructions or comments you have for FedEx, your broker or your consignee. This information might inform FedEx about special handling requirements, explain what the consignee should do after receiving the shipment, etc. Feel free to add anything you think might be useful.

Special Instructions:

H

Data provided for example purposes only.

Close x

Originator:
The person completing the form.

Signature:
Signature of the Originator.

Your shipment cannot be processed without a date and signature.

I declare that all the information contained in this invoice to be true and correct.
Originator or Name of Company Representative if the invoice is being completed on behalf of a company or individual.

Signature / Title / Date

Samuel McSample
Shipping Agent/Sept. 1, 2011

I

Data provided for example purposes only.

J. Forms

For assistance with shipping dangerous goods, or for any dangerous goods shipments that fall outside of the guidance of this document, including Infectious Substances, Category A, please complete the Intent to Ship Hazardous Materials Form (<http://ehs.columbia.edu/IntentToShipHazardousMaterialsForm.pdf>) and email to hazshipping@columbia.edu.

K. References

Dangerous Goods Regulations. International Air Transport Association (IATA).
<http://www.iata.org>.

Department of Transportation. 49 CFR Parts 171-180. Hazardous Materials Regulations.
http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title49/49cfrv2_02.tpl.

Guidelines for the Safe Transport of Infectious Substances and Diagnostic Specimens. World Health Organization, 2004.
http://www.who.int/csr/resources/publications/WHO_CDS_CSR_LYO_2004_9/en/.

Public Health Service 42 CFR Part 72. Interstate Shipment of Etiologic Agents. Federal Register, Revised October 1, 2005.