Preparing Infectious Substances Division 6.2 Biological Substances, Category B Samples for Air Shipment

I. GENERAL AWARENESS/FAMILIARIZATION TRAINING.
When you prepare packages containing hazardous materials and hand them off to commercial air carriers, you are functioning as a "Hazmat Employee" who is required to be familiar with the requirements of the Federal hazardous materials transportation laws found in the Code of Federal Regulations 49CFR Chapter 1, Subchapter C. The contents of this Subchapter C are called the Hazardous Materials Regulations (HMR). The requirements in the HMR apply to each person who offers a hazardous material for transportation in commerce, causes a hazardous material to be transported in commerce, or transports a hazardous material in commerce and who performs or is responsible for performing a pre-transportation function like packaging and labeling. The purpose of the HMR is to prevent injuries by ensuring that hazardous materials are packaged and marked in a manner to prevent injuries. There are penalties for noncompliance. Each person who knowingly violates a requirement of Federal hazardous material transportation law is liable for a civil penalty up to $75,000 for each violation. If serious accidents occur as a result, the penalty can be up to $175,000 per violation. **This training is exclusive to shipping a category of infectious substances called Biological Substance, Category B**, which does not require specialized procedures or materials beyond those provided in this training. Examples of procedures and materials beyond the scope of this training include using the Shipper's Declaration Form or United Nations Specification Packaging. If your hazardous materials shipment requires a Shipper's Declaration Form or United Nations Specification Packaging, you must contact Environmental Health & Safety at 824-6200 for further details.

II. FUNCTION-SPECIFIC TRAINING

**DEFINITIONS**
- Regulated infectious substances are substances which are known or are reasonably expected to contain pathogens which are likely to cause disease in humans or animals. For human or animal specimens, identification must be based on the known medical history or symptoms of the source patient or animal, endemic local conditions, or professional judgment concerning the individual circumstances of the source human or animal.
- Infectious substances are divided into Category A or Category B based on the shipper identifying the proper category. You’re encouraged to contact EHS for identification assistance at 949-824-6200.
- Category A is an infectious substances which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals. For human or animal specimens, assignment to Category A must be based on the known medical history or symptoms of the source patient or animal, endemic local conditions, or professional judgment concerning the individual circumstances of the source human or animal. For indicative examples of Category A, see [IATA Dangerous Goods Regulations Table 3.6.D](#).
- Category B is an infectious substance which does not meet the criteria for inclusion in Category A. This procedure is only for Category B shipments.
- Infectious substances in Category B must be assigned to UN 3373.

**PROCEDURE**
1. If shipping outside the United States, contact Export Controls office for assistance in determining any specific export licensing requirements before proceeding to Step 2. Use the [Request Review of Export](#) link or contact Marci Copeland 949.824.0445, m.copeland@uci.edu. Transferring tangible research material to other parties may trigger some disclosures. See [Material Transfer Agreements](#).
2. Place Material In Watertight Primary Container (or sift proof for solids)

- All primary receptacles must have positive closures (such as screw-on or push-on lids) and must be taped, wired, or other secured by other positive means.
- Examples include plastic canisters, glass/plastic jars, glass/plastic vials.
- Liquids must not completely fill the inner package at 55C (131F).
- Plastic primary receptacles must have a wall thickness at least 0.2 mm.
- You must cushion each primary container to prevent contact with other containers to prevent breakage. The cushioning material can be the same material used for absorbent required in Step 4.
3. Place Primary Container in a Watertight Secondary Packaging (or sift proof for solids)

- Examples of secondary packages include plastic canisters, sealed plastic bags, sealed Styrofoam containers 1” thick minimum, screw-cap cans.
- Secondary packaging must not react chemically with the dangerous good.

4. Place Absorbent Material between Primary Receptacle and Secondary Packaging

- Make sure that multiple primary receptacles are individually wrapped to prevent contact.
- Use enough absorbent material to absorb the entire contents of all primary containers.
- Examples include cellulose wadding, cotton balls, super absorbent packets, paper towels.
- Adsorbent materials must not react chemically with the dangerous good.

5. Place Secondary Packaging into a Sturdy Outer Packaging

- Sturdy outer packaging capable of withstanding a 7 foot drop from any direction must consist of corrugated fiberboard, wood, metal or rigid plastic. Do not use boxes that are visibly damaged (surface tears, crushed corners, etc.).
- UNACCEPTABLE outer packaging includes Styrofoam boxes, plastic bags, paper envelopes, FedEx envelopes, FedEx tubes, FedEx Pak or FedEx box.
- The minimum package size accepted by FedEx is 7” X 4” X 2”. For packages below this size, FedEx offers overwraps to bring the package up to the minimum size, as long as your package meets the four basic packaging requirements.
- Maximum amounts:
  - Liquids
    - Primary receptacle – 1 L
    - Outer packaging – 4 L
  - Solids
    - Primary receptacle – 4 kg
    - Outer packaging – 4 kg
- An itemized list of contents must be enclosed between the secondary packaging and the outer packaging.

6. MARKINGS ON OUTER PACKAGING

- One the same side of the outer package:
  - Clearly print the name and address of the shipper and of the recipient
  - Clearly print the name and telephone number of the responsible person must be provided on the air waybill or on the package.
  - Affix a Biological substance, Category B label with minimum dimensions of 50mm x 50mm. See label example at: UN3373 Biological substance, Category B.jpg
  - Affix directional arrows if primary receptacles exceed 50 mL.
This packaging and labeling procedure is only for those air carriers that accept goods under the International Air Transport Association (IATA) Dangerous Goods Regulations.

If using refrigerants classified as dangerous goods like dry ice or liquid nitrogen, you must be certified by completion of function specific training for those refrigerant materials. And there are additional packaging, labeling, and documentation requirements. Visit www.UCLC.uci.edu for e-course certification.
III. SAFETY TRAINING

A. Emergency Response Information. Hazmat employees shipping Biological substances, Category B are exempted from safety training on emergency response information as required in the HMR. UC Irvine hazmat employees shipping Biological substance, Category B must complete safety training on emergency procedures provided in Safety Fundamentals, Laboratory Safety Fundamentals, Health Affairs Annual Safety Training, Bio Sci 194S, or a Hazard Communication training prior to preparing hazardous materials packages. If you are not current on this training, log onto www.uclc.uci.edu, take the Safety Training Self-Assessment, then complete the required safety trainings. Additionally, emergency procedures for responding to hazardous materials incidents are described in the Emergency Procedures for UCI.

B. Measures to protect hazmat employees from hazardous materials hazards and methods and procedures for avoiding accidents are provided through Safety Fundamentals, Laboratory Safety Fundamentals, Health Affairs Annual Safety Training, Bio Sci 194S, or a Hazard Communication training. UCI hazmat employees take at least one of these courses based on their job duties at UC Irvine. If you are not up to date on these trainings, log onto www.uclc.uci.edu, complete or update the Safety Training Self-Assessment, then complete the required safety trainings.

IV. SECURITY AWARENESS TRAINING

Regardless of contents, thefts are possible when packages are left unattended. Those wanting to cause harm or create fear in the community may target packages containing hazardous materials. Such packages are easily identifiable since the HMR require identifying markings on the outer package. Hazardous materials packages must be secured until physically handed off to the air carrier's representative. Any suspicious persons or activity in areas where hazardous materials packages are secured must be immediately reported to UCI Police (tel. 911) or UCIMC Security (tel. 714.456-6321) for response. Follow instructions in the UCI Emergency Procedures flipchart including getting a good description of the person(s) if safety allows.

V. COMPETENCY ASSESSMENT

Subject: Air Shipping Shipping Biological substance, Category B, UN3373

Requirements
2. Function Specific Training, the above procedure.
3. Refresher training required every two years to maintain certification.

Name: ______________________ Date: _______ Pass Certification __________________________

Circle best answer.
1. Infectious substances are substances which are known or reasonably expected to contain pathogens?
   True False

2. Which two are true about Category A or Category B infectious substances?
   a. When exposure occurs, Category A substances are capable of causing permanent disability, serious life-threatening or fatal disease in otherwise healthy humans or animals.
   b. When exposure occurs, Category A substances are capable of causing disease in otherwise healthy humans or animals but rarely serious and for which preventative or therapeutic interventions are often available.
   c. When exposure occurs, Category B substances are capable of causing permanent disability, serious life-threatening or fatal disease in otherwise healthy humans or animals.
   d. When exposure occurs, Category B substances are capable of causing disease in otherwise healthy humans or animals but rarely serious and for which preventative or therapeutic interventions are often available.

3. What is the proper shipping name for Category B infectious substances?
   a. Infectious substance, Category B
   b. Biological substance, Category B
   c. Category B Infectious Substance
   d. Category B
4. Put in order (mark 1st, 2nd, 3rd) the three components used to package Category B substances:

[Rigid outer packaging] [Primary Inner Receptacle] [Secondary Inner Packaging]

5. For liquids check all true statements:
   a. The primary receptacle must be leakproof and must not contain more than 1 L;
   b. The secondary packaging must be leakproof;
   c. Multiple fragile primary receptacles must be individually wrapped or separated to prevent contact between them;
   d. Sufficient quantity of absorbent material must be placed between the primary and secondary packaging.
   e. Directional arrows must be placed on two opposite sides of the outer packaging when the primary receptacles exceed 50 mL.
   f. It is necessary to allow ullage in the primary receptacle.
   g. The outer packaging must not contain more than 4 L (excluding refrigerants).

6. For solids check all true statements:
   a. The primary receptacle must be siftproof;
   b. The secondary packaging must be siftproof;
   c. Multiple fragile primary receptacles must be individually wrapped or separated to prevent contact between them;
   d. The outer packaging must not contain more than 4 kg (excluding refrigerants).

7. An itemized list of contents must be enclosed between the secondary and outer packaging? True False

8. Pick the correct hazard label for Biological substance, Category B.

   a. 
   b. 
   c. 
   d. 

9. What must be written or placed on the outer package (check all that apply)?
   a. Name, address of the shipper;
   b. Name and address of the receiver;
   c. If not on air waybill, name and telephone # of responsible person
   d. The UN3373 hazard diamond;
   e. The proper shipping name Biological substance, Category B;
   f. The international biohazard symbol;
   g. Directional arrows on opposite sides if primary receptacles contain over 50 mL liquid;
   h. Any other required hazard labels when regulated refrigerants are used (dry ice, liquid nitrogen).

10. On the Air Waybill, what must be written into the “Nature and Quantity of Goods” box (pick 2)?
    a. UN4559, INFECTIOUS SUBSTANCE
    b. EXCEPTED CATEGORY B
    c. UN3373, BIOLOGICAL SUBSTANCE, CATEGORY B
    d. RESEARCH SPECIMENS: BIOHAZARD
    e. Name and telephone # of responsible person if not written on outer packaging.

11. There are additional function specific trainings required for certification to ship dry ice or liquid nitrogen?
    True    False

Trainee Signature ______________________, Date ________________ (renew every two years).

Cut and paste the entire Competency Assessment with your responses and email to chrisyh@uci.edu for scoring and training certification reply back to you. Maintain the received reply as your record of training, placing with your work-unit specific training in SOS Binder. Enter as Self-Reported Training in your UCLC transcript.

References: