

Preparing Genetically Modified Micro-Organisms (GMMOs) and Genetically Modified Organisms (GMOs) for Air Shipment (Non-Infectious, Non-Toxic Only)

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. 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 of not more than \$32,500 and not less than \$275 for each violation. **This training is exclusive to air shipping from UC Irvine genetically modified micro-organisms (GMMOs) and genetically modified organisms (GMOs) that are non-infectious and non-toxic.** This type of shipment does not require specialized procedures or materials beyond provided for in this training. Procedures and materials beyond this training include Shipper's Declaration Forms and United Nations Specification Packaging. If your hazardous materials shipment requires Shipper's Declaration Form or United Nations Specification Packaging, you must contact Environmental Health & Safety at 824-6200 for further details. No declaration of dangerous goods is required when completing waybills for UN 3245 GMMOs and GMOs.

II. FUNCTION-SPECIFIC TRAINING

DEFINITIONS

- GMMOs and GMOs are micro-organisms and organisms in which genetic material has been purposefully altered through genetic engineering in a way that does not occur naturally.
- GMMOs and GMOs which do not meet the definition of toxic or infectious substances must be assigned to Class 9 Miscellaneous, UN 3245.
- Genetically modified live animals must be transported under terms and conditions of the appropriate national authorities of the States of origin and destination; FedEx does not accept live animals.
- Passengers on aircraft are prohibited from transporting GMMOs and GMOs on their person or in carry-on or checked baggage.

PROCEDURE

1. If shipping outside the United States, contact UCI Office of Research Administration (ORA) Export Controls for assistance in determining any specific export licensing requirements before proceeding to Step 2. Contact: Contact: Marci Copeland at marci.copeland@rgs.uci.edu. Have receiver obtain import permits if necessary.
2. If including Dry Ice in the shipment, follow additional procedures for assembling the package and marking the outer box as shown in the Dry Ice Shipping training at www.uclc.uci.edu.
3. The packaging procedure is called Triple Pack.

References:

Section 3.9.2.5 Genetically Modified Micro-Organisms (GMMOs) or Genetically Modified Organisms (GMOs), Dangerous Goods Regulations. International Air Transport Association. 2011.
Section 5, Packing Instruction 959, Dangerous Goods Regulations. International Air Transport Association. 2011.
[CFR49.172.704 Training Requirements](http://www.myregs.com/dotrspa/) at www.myregs.com/dotrspa/

4. Place Material In Leakproof Primary Container



- All primary receptacles must be leakproof for liquids or siftproof for solids.
- Examples include plastic canisters, glass/plastic jars, glass/plastic vials, Ziplock bags.
- Liquids must not completely fill the inner container . . . leave ullage.
- 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.

5. Place Primary Container In a Watertight Secondary Container



- Examples of secondary packages include plastic canisters, sealed plastic bags, sealed Styrofoam containers 1" thick minimum, screw-cap cans.

6. Place Absorbent Material Between Primary and Secondary Container



- 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.

7. Place Secondary Container Into a Sturdy Outer Packaging



- Sturdy outer packaging capable of withstanding a 7 foot drop from any direction.
- Use an undamaged cardboard box (known as a fibreboard box). You can re-use a box as long as it is undamaged . . . no visible crush marks, tears, or punctures . . . and you deface previous markings.
- UNACCEPTABLE outer packaging includes Styrofoam boxes, plastic bags, paper envelopes, FedEx envelopes, FedEx tubes, FedEx Pak or FedEx box.
- Use a box that is at least 6" x 6".

8. Mark Outer Packaging

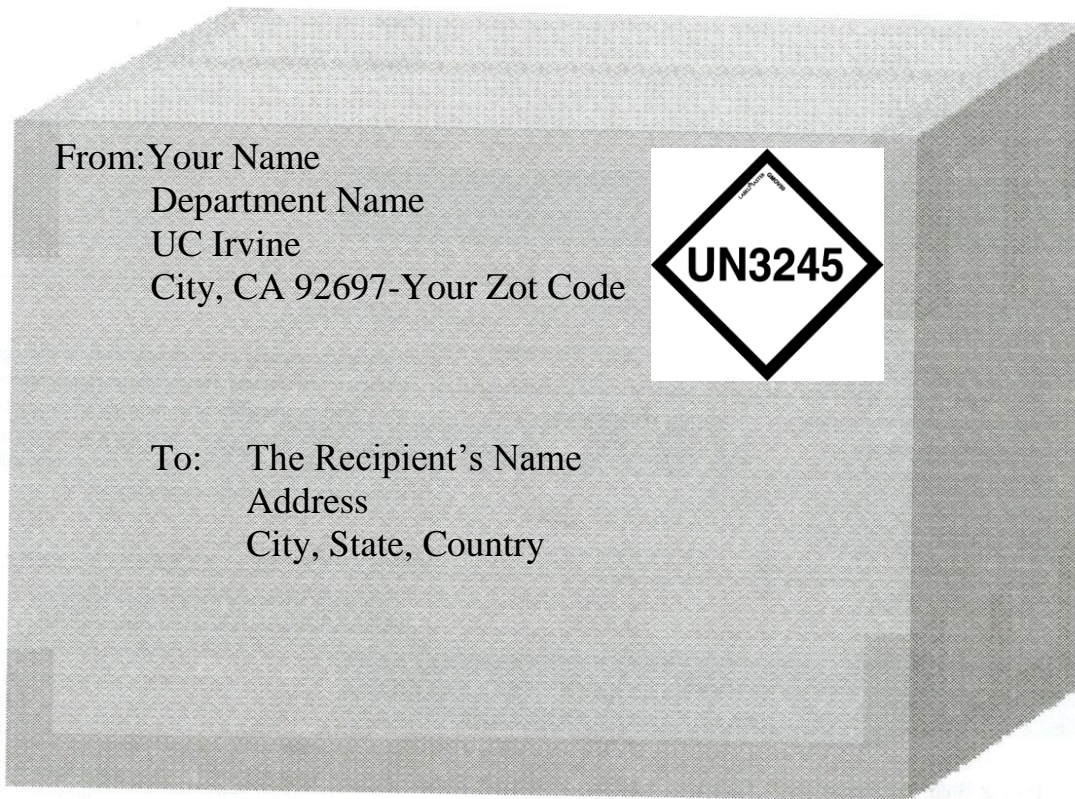
- One the same side of the outer package:
 - Clearly print the Addressee and Addressor.
 - Affix the **UN 3245 diamond** marking having a length of at least 2.5" on each side. Place the marking on the box in the diamond position and tape over it completely. You can see an example of the **UN 3245 diamond** on the [EHS Certified Shipper's Toolbox](#).

References:

Section 3.9.2.5 Genetically Modified Micro-Organisms (GMMOs) or Genetically Modified Organisms (GMOs), Dangerous Goods Regulations. International Air Transport Association. 2011.

Section 5, Packing Instruction 959, Dangerous Goods Regulations. International Air Transport Association. 2011.

CFR49.172.704 Training Requirements at www.myregs.com/dotrspa/



This packaging and labeling procedure is only for those air carriers that accept goods under the International Air Transport Association (IATA) & U.S. DOT Dangerous Goods Regulations.

References:

Section 3.9.2.5 Genetically Modified Micro-Organisms (GMMOs) or Genetically Modified Organisms (GMOs), Dangerous Goods Regulations. International Air Transport Association. 2011.

Section 5, Packing Instruction 959, Dangerous Goods Regulations. International Air Transport Association. 2011.
[CFR49.172.704 Training Requirements](http://www.myregs.com/dotrspa/) at www.myregs.com/dotrspa/

II. SAFETY TRAINING

- A. Emergency Response Information. UC Irvine hazmat employees shipping dangerous goods must complete safety training on emergency procedures provided in any of the following--Core Safety, Lab Core Safety, SOM Annual Safety Training, Bio Sci 194S or Hazard Communication--prior to preparing hazardous materials packages. If you are not current on this training, log onto www.uclcl.uci.edu, click on the "Campus" tab, 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 Flipcharts for [UCI](#) and [UCIMC](#).
- B. Measures to protect hazmat employees from hazardous materials hazards and methods and procedures for avoiding accidents are provided through the Core Safety, Lab Core Safety, SOM Annual Safety Training, Bio Sci 194S or Hazard Communication trainings. 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.uclcl.uci.edu, click on the "Campus" tab, take 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 kept 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.

IV. COMPETENCY ASSESSMENT

1. True or False: In terms of shipping definitions, GMMOs and GMOs occur naturally?
2. True or False: I can ship infectious or toxic substances as UN3245?
3. A or B: A) UN3245 needs two layers of packaging called Double Pack. B) UN 3245 needs three layers of packaging called Triple Pack.
4. How much absorbent material needs to be placed between primary and secondary package?
5. True or False: Secondary containers need to be leakproof?
6. True or False: Adding dry ice to my GMO/GMMO package requires additional shipping training?
7. True or False: I can place multiple fragile inner packages against each other without cushioning between them?
8. True or False: The outer package must have the Name & Address for sender, receiver, and a UN3245 diamond affixed.
9. True of False: I need to declare UN3245 as a dangerous goods on my waybill and sign a Shipper's Declaration of Dangerous Goods form?
10. True or False: I can reuse visibly damaged or dented cardboard boxes for my outer package?
11. True or False: Hazardous materials packages can be left outside in the hallway for pick up?
12. Suspicious persons in the area where hazardous materials packages are kept should be responded to by: _____
13. True or False: There are additional requirements when dry ice is included in the package?
14. True or False: I can use Styrofoam for my sturdy outer package for GMMOs?
15. True or False: I need to check with Office of Research Administration Export Controls for international shipments?

Send assessment answers for feedback to chris.haug@uci.edu.

CERTIFICATION OF TRAINING:

I certify completion of training on hazardous materials shipping regulatory awareness, safety, security, and function specific procedures for non-infectious and non-toxic GMMOs and GMOs.

Trainee Signature _____, Date _____ (renew every two years).

Maintain this record of training with your work-unit specific training.

References:

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