

SHIPPING DANGEROUS GOODS:

HOT TOPICS

(Updated 03/14/11)

In-House Dangerous Goods Shipping Training Program: As a service to the VCU research community, the Office of Environmental Health & Safety (OEHS) offers dangerous goods training/certification which focuses on shipment of infectious substances, dry ice, and hazardous chemicals through quarterly platform presentations. This training session is mandatory for any VCU/VCU Health system employee who ship Department of Transportation (DOT) dangerous goods. It is illegal to ship dangerous goods without the proper training and certification. The training course will cover IATA and DOT regulations pertaining to shipment of dangerous goods by air.

Examples of dangerous goods include infectious agents, patient specimens, hazardous chemicals, genetically modified organisms or plants, and dry ice. Training certificates for the shipment of dangerous goods will be provided to those who successfully complete the certification examination and are valid for two years. ***Pre-registration is not required. Please be on time, as those arriving more than ten minutes after the beginning of training will not be certified.***

1. Platform Training Presentations:**

- a. March 2, 2011: Sanger Hall, Room 6-032
- b. June 1, 2011: Sanger Hall, Room 6-032
- c. September 7, 2011: Sanger Hall, Room 6-032*
- d. December 7, 2011: Sanger Hall, Room 6-032*

* Classroom location may be subject to change. Please contact OEHS at 828-1392 in advance to confirm the location of the training session.

** All training sessions are held from 9:00 – 12:50 a.m. Anyone who ships DOT dangerous goods by air must be trained, tested, and certified every two years. To fulfill this requirement, individuals may attend one of our platform training sessions offered quarterly or may obtain training from third parties. ***It is highly encouraged to have multiple trained/certified shippers for each laboratory/office in anticipation of “urgent” shipping needs, even if the laboratory does not normally ship out dangerous goods. If a need for dangerous goods shipping training/certification arises between the regularly scheduled OEHS training classes, individuals must make arrangements to obtain training from outside vendors.***

2. Questions concerning dangerous goods should be directed via e-mail to Paul Smith at pasmith@vcu.edu, Mike Elliott at mtelliot@vcu.edu, or Elizabeth Land at eoland@vcu.edu.

II. REGULATORY UPDATES. The International Air Transportation Association (IATA): “Regulations for the Transport of Dangerous Goods, 52nd Edition,” contains several changes affecting shipping of chemicals, infectious substances, and diagnostic/clinical specimens. Per IATA, the following changes became effective January 1, 2011:

A. Applicability.

1. 1.2 — Application of these Regulations.

This subsection has been significantly revised to bring in text addressing approvals by the State of origin and State of the operator. The requirements for exemptions have also been clarified, and there is a new provision allowing for the carriage of dangerous goods permitted in passenger baggage in “excess baggage consigned as cargo”.

2. 1.3 — Shipper's Responsibilities. Retention of a copy of the Shipper's Declaration for a minimum period of 3 months is now mandatory. **** However, because of United States Government (USG) state variation USG-01, “a copy of the transport document, or an electronic image thereof, must be retained by the shipper for not less than two years after the dangerous goods are accepted by the initial operator.”**

B. Limitations.

1. 2.3 — Dangerous Goods Carried by Passengers or Crew.

The provisions for dangerous goods in passenger baggage have been revised. Changes include:

- provisions for security-type attaché cases as specified; prohibition on the carriage of electro shock weapons (e.g. Tasers);
- allowance for lithium ion battery-powered mobility aids;
- allowance for portable medical devices, such as defibrillators and nebulizers, that are powered by lithium batteries;
- revision to the provisions for fuel cell systems to allow the carriage of certain spare fuel cell cartridges in checked baggage

2. 2.5 — Dangerous Goods in Operator's Property. The provisions have been expanded to allow operators to carry and use on board during flight electronic, equipment such as personal entertainment devices and credit card readers containing lithium batteries and spare batteries for these devices. Replacement devices containing batteries and replacement batteries must be shipped in accordance with the Regulations.

3. **2.7 — Dangerous Goods in Limited Quantities.** Paragraph 2.6 has been deleted as provisions for exemptions and approvals are now all addressed in 1.2. Consequently 2.8 has been renumbered to 2.7. The provisions for limited quantities have been revised to reflect the closer alignment with the provisions of the UN Model Regulations. A new marking in place of “LTD QTY” has been adopted and this text is no longer required on the Shipper's Declaration.

4. **2.8.2 — State Variations.** Australia, Belgium, Canada, Switzerland, United Arab Emirates the United Kingdom and the United States have advised of amendments to their State variations. State variations have been filed by the Democratic People's Republic of Korea and Luxembourg.

5. **2.8.4 — Operator Variations.** There are a significant number of additions, deletions and modifications to the operator variations.

C. Classification: 3.1.2 — There is revision to the exemption from classification in Class 2 for certain items. There is a revision to Class 8 to allow for the use of an in vitro test for the determination of the packing group in place of an in vivo test. The classification criteria for magnetized material has been significantly revised. Environmentally hazardous substances not presenting a danger covered by other classes must now be classified as either UN 3077 or UN 3082.

D. Identification.

1. **4.1.6** — Using the List of Dangerous Goods. Revisions have been to the text addressing the maximum net quantity per package, paragraphs 4.1.6.10 and 4.1.6.12 to identify that the maximum net quantities may be exceeded when an approval is issued by the appropriate national authorities of the State of origin and State of the operator.

2. 4.2 — List of Dangerous Goods

Amendments to the List of Dangerous Goods include:

- adoption of the new packing instruction numbers for all substances in Classes 3, 4, 5, 8 and 9 and Division 6.1;
- new entries for UN 3482, Alkali metal dispersion, flammable and Alkaline earth metal dispersion, flammable, in Division 4.3 with a subsidiary risk of Class 3. This replaces the condition set by special provision A147 against UN 1391 where a flammable subsidiary was applied when the flash point was 60°C or less;
- new entries for UN 3485, UN 3486 and UN 3487, calcium hypochlorite, corrosive (dry, hydrated and mixtures) in Division 5.1 with a subsidiary risk of Class 8. This replaces the condition set by special provision A135 against UN 1748, UN 2208 and UN 2880 where a corrosive subsidiary was applied when the substance also met the criteria for Class 8;
- new entries added to UN 3166 for engines and vehicles powered by fuel cells, flammable liquid and flammable gas;
- limited quantity provisions have been added for Fuel cell cartridges, containing flammable liquids, UN 3473; Fuel cell cartridges, containing water-reactive

- substances, UN 3476; Fuel cell cartridges, containing corrosive substances, UN 3477; Fuel cell cartridges, containing liquefied flammable gas, UN 3478; and Fuel cell cartridges, containing hydrogen in a metal hydride, UN 3479;
- the proper shipping name for UN 3474 has been changed to 1-Hydroxybenzotriazole monohydrate;
 - a new entry has been added for Iodine, UN 3495 in Class 8 with a subsidiary risk of Division 6.1;
 - the net quantity per package for Medicine, liquid, flammable, toxic, n.o.s., UN 3248, Medicine, liquid, toxic, n.o.s., UN 1851 and Medicine, solid, toxic, n.o.s., UN 3249 on passenger aircraft and Cargo Aircraft Only have been significantly revised;
 - a significant number of generic and n.o.s. proper shipping names now require the addition of the technical name as indicated by the addition of the “” symbol.

3. 4.4 — Special Provisions. Changes to the special provisions include:

A1 — has been revised to now also require approval from the State of the operator in addition to the approval of the State of origin.

A2 — has been revised to make it only applicable to transport on cargo aircraft and also there will be a requirement for approval from the State of the operator in addition to the approval of the State of origin. Substances previously assigned Special Provision A109 have now been assigned Special Provision A2 and Special Provision A109 is now “not used”.

A21 — has been revised to include reference to engines, flammable gas and flammable liquid powered as well as reference that vehicles or equipment powered by a fuel cell engine must be consigned under the new entries for engine, fuel cell or vehicle, fuel cell.

A47 — now identifies that genetically modified micro-organisms (GMMO) and genetically modified organisms (GMO) packed in accordance with Packing Instruction 959 are not subject any other requirements in the Regulations.

A70 — has been modified to include fuel cell engines. There is also new text identifying that flammable gas powered internal combustion or fuel cell engines that have been flushed and purged as described may be shipped as not restricted.

A88 — has been revised to include provision for low production run lithium batteries.

A169 — **A173** — are new special provisions that have been assigned to certain hypochlorite, bromate, chlorate, chlorite and permanganate generic entries to identify that certain mixtures are forbidden for transport.

A178 — is a new special provisions that allows for security type equipment such as attaché cases, cash boxes, etc that contain dangerous goods such as lithium batteries to be considered as not restricted subject to the conditions set out in A178.

A179 — which is assigned against UN 3077, Environmentally hazardous substance, solid, n.o.s. allows these substances to be shipped in intermediate bulk containers (IBCs) with a maximum net quantity not exceeding 1,000 kg as provided for in Packing Instruction 956.

A182 — which is assigned against UN 3171, Battery-powered equipment identifies that equipment that only contains lithium batteries must be classified as either UN 3091 or UN 3481.

A183 — which is assigned against the entries for batteries identifies that waste batteries and batteries being shipped for recycling are prohibited from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

E. Packing.

1. **5.0.2 — General Packing Requirements.** The requirements for closures for inner packagings for liquids have been revised to now require a secondary means or maintaining the closure. In the absence of secondary means, the inner packaging(s) must be placed in a leakproof liner. The previous provisions in paragraph 5.0.2.12.2 for absorbent material and in paragraph 5.0.2.12.3 for inner liners have been deleted. When such requirements exist they have now been placed directly in the applicable packing instructions as Additional Packing Requirements.

2. **5.0.7 — List of Packagings.** All reference to inner packaging (IP) codes, aside from those referencing aerosols (IP7, IP7A, IP7B and IP7C) have been deleted from the Regulations.

3. **Packing Instructions.** All of the reformatted packing instructions included in Appendix H in the 51st edition have now been incorporated into the body of the Regulations. The reformatted packing instructions apply to all packing instructions in Classes 3, 4, 5, 8 and 9 and Division 6.1. There is a three-month transition period to allow for packages prepared for transport before 31 December 2010 using packing instructions in the 51st edition to be presented for transport until 31 March 2011.

In addition, there are the following changes:

202 — The packing instruction has been restructured and the provisions for open cryogenic receptacles have been revised.

214 — Applicable to UN 3468, hydrogen in a metal hydride storage system has been completely revised.

New packing instructions Y215, Y374, Y495 and Y873 have been added to address the requirements for shipping fuel cell cartridges in limited quantities.

565 — This is the packing instruction applicable to UN 3356, Oxygen generator, chemical. The text has been revised to include indicative methods of preventing unintentional activation.

620 — **This is the packing number assigned to infectious substances in Category A (UN 2814 and UN 2900) and was previously Packing Instruction 602. The change in number aligns the numbering with the other modes of transport.**

953 — This is the packing number assigned to magnetized material (UN 2807). The requirements for magnetized material have been significantly revised. A Shipper's Declaration is no longer required provided alternative written or electronic documentation includes the words “magnetized materials”.

954 — This is the packing number assigned to dry ice and was previously Packing Instruction 904.

956 — This is the packing number assigned to a number of solid substances in Class 9, including Environmentally hazardous substance, solid, n.o.s. (UN 3077). The packing instruction has been revised to include the list of permitted intermediate bulk containers (IBCs) for UN 3077.

959 — This is the packing number assigned to genetically modified micro-organisms (GMMO) and genetically modified organisms (GMO), (UN 3245). The packing instruction has been revised to the same structure and format as Packing Instruction 650. This includes a new diamond-shaped marking for UN 3245 that must be applied to the outside of the outer packaging.

965 — 970 — There have been minor changes to the packing instructions for lithium ion and lithium metal batteries. Most of the changes have been to clarify the requirements.

F. Packaging Specifications and Performance Tests.

1. **6.1 — Requirements for Inner Packagings.** All reference to inner packaging (IP) codes, aside from those referencing aerosols (IP7, IP7A, IP7B and IP7C) have been deleted.

2. **6.4 — Requirements for the Construction and Testing of Cylinders and Closed Cryogenic Receptacles, Aerosol Dispensers and Small Receptacles Containing Gas (Gas Cartridges) and Fuel Cell Cartridges Containing Liquefied Flammable Gas.** Additional provisions have been added to address the inspection, test and marking requirements for metal hydride storage systems.

3. **6.8 — Requirements for the Construction and Testing of Intermediate Bulk Containers (IBC).** With IBC now being permitted for air transport, for UN 3077 only, some of the construction and test requirements for IBC have now been added to the Regulations.

G. Marking & Labelling.

1. **7.1.5.1 —** Has the following changes:

- the paragraph in 7.1.5.1(a) regarding the allowance for the UN number to be placed inside a diamond for dangerous goods packed in limited quantities has been deleted. This format of indicating limited quantities is no longer permitted with the new limited quantity marking requirements of 7.1.5.3;
- paragraph (b) now identifies that the name and address of the shipper and consignee should be on the same surface as the marking for the UN number and proper shipping name when the package size is adequate;
- old paragraph (c) which required the net quantity and gross weight of the package for explosives has been deleted;
- except as provided, the net quantity of dangerous goods must be shown on all packages regardless of the class of the dangerous goods.

2. **7.1.5.3** — The previous marking of “limited quantity”, or “LTD QTY” has been replaced by a new diamond-shaped marking that includes the symbol “Y” in the centre.

3. **7.1.6.4** — This new paragraph has been added to identify that environmentally hazardous substances, solid (UN 3077) when shipped in an IBC of more than 450 L capacity must have the required UN number, proper shipping name and environmentally hazardous markings on two opposite sides of the IBC.

4. **7.2.3.9.2** — This new paragraph has been added to identify that environmentally hazardous substances, solid (UN 3077) when shipped in an IBC of more than 450 L capacity must have the Class 9 hazard label applied on two opposite sides of the IBC.

5. **7.2.4.4** — A new exception to the application of package orientation arrows applies for packages containing liquid dangerous goods in hermetically sealed inner packagings each containing not more than 500 mL.

6. **7.2.4.7** — An allowance has been made for the lithium battery handling label to be reduced in size to not less than 74 mm × 105 mm where the packages are of dimensions such that they can only bear smaller labels.

H. Documentation.

1. **8.1.6.9.2** — The requirements for what must be shown as the quantity per package has been clarified for items listed with “no limit” or a packing instruction reference. In addition, there is now a requirement for explosive articles of Class 1 to have the net explosive mass shown in addition to the net quantity.

2. **8.1.6.9.4** — There is no longer a requirement for “limited quantity” or “LTD QTY” to be shown in the authorisations section of the DGD for dangerous goods shipped in accordance with the limited quantity provisions. The indication of a “Y” packing instruction number is considered adequate. Special provisions A88, A99 and A130 have been added to the list of special provision numbers that must be shown on the DGD, when applicable.

I. An addendum to the 52nd Edition of the IATA Dangerous Goods Regulations was posted December 30, 2010 and can found at the following webpage: http://www.fiata.com/uploads/media/IATA_DGR_52nd_Edition_rev01_ENGLISH_effective_1_January_2011_-_ADDENDUM.pdf. These changes were effective as of January 1, 2011.