

SHIPPING DANGEROUS GOODS:

HOT TOPICS

(Updated 07/20/09)

I. DANGEROUS GOODS TRAINING OPPORTUNITIES: As a service to the research community, OEHS offers two means of acquiring comprehensive dangerous goods training and certification as mandated by DOT:

A. Platform Training Presentations: Sanger Hall room 6-032 from 9:00 – 11:50 AM for 2009 training dates. Please see the dates listed below for training sessions.

- March 4, 2009*
- June 3, 2009*
- September 2, 2009*
- December 2, 2009*

*Please contact OEHS (828-1392) in advance to confirm training date/time/location.

B. Distance Learning: Individual training/certification can be achieved by utilizing the university's Blackboard Academic Suite. To gain accesses please visit the [Training Link](#) on the Chemical and Biological Safety website. Questions concerning dangerous goods should be directed via e-mail to Paul Smith at pasmith@vcu.edu, Mike Elliot 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, 50th Edition," contains several changes affecting shipping of infectious substances and diagnostic/clinical specimens. Per IATA, the following changes became effective January 1, 2009:

A. Applicability.

1. 1.2.3 – Exceptions. The exception for aircraft used to transport dangerous goods to provide medical aid to a patient during flight has been clarified. The revised text makes it clear that the aircraft can be one adapted for specialized use, i.e. air ambulance, or may a regular public transport aircraft where the operator approves the carriage.

2. Training Requirements.

a. 1.5.0.3. There has been a change to the provisions on recurrent training. The recurrency period is still 24 months. However, there is now provision for a 3-month



“window” that allows for recurrent training conducted within the final 3 months of the 24-month period to be considered to have been completed on the expiry date of the 24-month period. For example, a person who completed a course on 30 June 2007 needs to complete a revalidation by 30 June 2009. However, the revalidation may be taken between 1 April and 30 June 2009 for the revalidation to be considered to have been completed on 30 June 2009. The next revalidation date will then be 30 June 2011.

b. 1.5.3. A new 1.5.3, Training Curricula – “No Carry” Operators has been added. The text and associated Table 1.5.B reinforces that even operators that have a policy of not carrying dangerous goods as cargo, mail or stores must still provide applicable employees with dangerous goods training.

c. 1.5.5.3. A minimum period of 36 months following the last training date has now been specified for retention of dangerous goods training records.

3. 1.6 – Dangerous Goods Security. 1.6.3.3. The list of high consequence dangerous goods has been revised to include certain explosives assigned to Division 1.4, explosives in Division 1.5, Class 3 and Division 4.1 desensitized explosives.

B. Limitations.

1. 2.3 – Dangerous Goods Carried by Passengers or Crew. The provisions for carbon dioxide, solid, small oxygen cylinders, underwater high intensity lamps (heat producing articles), lithium batteries and fuel cell cartridges have all been revised.

2. 2.7 – Dangerous Goods in Excepted Quantities. The requirements for excepted quantities have been revised to align with the provisions in the UN Model Regulations. This includes the assignment of an “EQ” code from E0 to E5 to identify if a substance is permitted in excepted quantities, in what quantity per inner packaging and per package. The current IATA Dangerous Goods in Excepted Quantities label has been replaced by a new excepted quantity marking.

3. 2.9.2 – State Variations. Australia, France, Malaysia, United Arab Emirates, the United Kingdom and the United States have advised of amendments to their State variations.

4. 2.9.4 – Operator Variations. There are a significant number of additions, deletions and modifications to the operator variations.

C. Classification.

1. 3.2.2.4. The exemption value for Division 2.2 gases has been revised to become 200 kPa (gauge) from the current value of 280 kPa (absolute).

2. 3.9.2.4. The criteria for classification of environmentally hazardous substances have been aligned with the provisions of 2.9.3 of UN Model Regulations.

D. Identification.

1. **4.1.3.2.** Text detailing the classification and assignment of the proper shipping name for mixtures and solutions containing two or more dangerous goods has been revised to identify options where a mixture or solution may contain only very small quantities of one or more dangerous goods in an otherwise pure substance.



2. 4.2 – List of Dangerous Goods.

a. The format of Table 4.2 has been revised to accommodate a new column for the “EQ” codes to identify maximum quantity per inner and outer packaging for dangerous goods in excepted quantities in accordance with Subsection 2.7. To accommodate the additional column, the columns for Class or Division (Column C) and subsidiary risk (Column D) have been combined into a single Column C. Any assigned subsidiary risk is shown in parentheses following the primary risk, as is required to be shown on the Shipper’s Declaration.

b. Amendments to the List of Dangerous Goods include: new entries for E85 and other ethanol and gasoline fuel mixtures; new fuel cell entries in Division 2.1, Class 3, Division 4.3 and Class 8. Revision to the entry for lithium batteries to separate lithium metal batteries and lithium ion batteries. Revision of packing group for UN 1250 and UN 1305. Revision to the entries for Nitric acid (UN 2031).

3. **4.4 – Special Provisions.** There are a number of new and revised special provisions, including those for lithium batteries and fuel cell cartridges. Special provisions modifications and new entries include: A45, A70, A112, A146, A161, A162, A163, A164, and A224.

E. Packing.

1. **5.0.2.11** – Revisions have been made to the provisions applicable to dangerous goods packed in the same outer packaging to address the situation where one or more of the dangerous goods are restricted by a gross weight rather than the net quantity.

2. **5.2.0.2** – Reference to ISO 1114 has been qualified such that the provisions of the applicable packing instructions take precedence.

3. Packinstructions.

a. **200** – There has been revision to a number of the Particular Packing Provisions to identify that certain materials are forbidden for use for cylinders and valves. Restrictions have been added for a number of gas mixtures prohibiting the use of aluminum cylinders except with approval from the appropriate national authority. There

have been a significant number of amendments to the test pressures and filling ratios for gases in Table 200.B.

b. 202 – Has been amended to allow for glass cryogenic receptacles.

c. 203 / Y203 – The provisions applicable to plastic aerosols have been revised.

d. 215 / 216 / 217 – These new packing instructions have been added to address the preparation of fuel cell cartridges containing liquefied flammable gas and fuel cell cartridges containing hydrogen in metal hydride (UN 3478 and UN 3479) and cartridges contained in equipment and packed with equipment.

e. 313 – Has been deleted. The packing instruction currently applies to fuel cell cartridges containing flammable liquids, including when contained in, or packed with, equipment. PI 313 has been replaced by PI 374, PI 375 and PI 376 which apply to the fuel cell cartridges, fuel cell cartridges contained in equipment and fuel cell cartridges packed with equipment respectively. The format of the packing instructions and the numbers assigned are aligned with the reformatting exercise for the other packing instructions that will apply from 1 January 2011.

f. 435 – Has been deleted and replaced by Packing Instruction 499. The wording of PI 499 is aligned with the revised wording in P099 in the UN Model Regulations.

g. 495 / 496 / 497 – These new packing instructions have been added to address the preparation of fuel cell cartridges containing water-reactive substances (UN 3476) and cartridges contained in equipment and packed with equipment. The packing instructions apply to the fuel cell cartridges, fuel cell cartridges contained in equipment and fuel cell cartridges packed with equipment respectively. The format of the packing instructions and the numbers assigned are aligned with the reformatted packing instructions that will apply for the other packing instructions from 1 January 2011 as shown in Appendix H.

h. 602 – The wording in PI 602 with respect to the primary receptacle and the secondary packaging being “watertight” has been revised to read “leak proof” to align with the terminology used in PI 650.

i. 699 – Has been added and applies to UN 3123 and UN 3125 in Packing Group I. This new packing instruction is identical in wording with PI 499.

j. 873 / 874 / 875 – These new packing instructions have been added to address the preparation of fuel cell cartridges containing corrosive substances (UN 3477) and cartridges contained in equipment and packed with equipment. The packing instructions apply to the fuel cell cartridges, fuel cell cartridges contained in equipment and fuel cell cartridges packed with equipment respectively. The format of the packing

instructions and the numbers assigned are aligned with the reformatted packing instructions that will apply for the other packing instructions from 1 January 2011 as shown in Appendix H.

k. 903 / 912 / 918 – Have been deleted. These packing instructions currently apply to lithium batteries, lithium batteries contained in equipment and lithium batteries packed with equipment. The three packing instructions have been replaced by PI 965 to PI 970. Packing Instructions 965 to 967 apply to UN 3480 – lithium ion batteries and UN 3481 – lithium ion batteries packed with equipment and lithium ion batteries contained in equipment respectively. Packing Instructions 968 to 970 apply to UN 3090 – lithium metal batteries and UN 3091 – lithium metal batteries packed with equipment and lithium metal batteries contained in equipment respectively. The per package limit for lithium metal batteries fully regulated as Class 9 on passenger aircraft has been reduced to 2.5 kgG per package and there must be a metal intermediate packaging or the outer packaging must be metal. The new packing instructions also include the provisions for shipping small lithium ion and lithium metal batteries that previously appeared in Special Provision A45 for batteries “not restricted” for transport. The weight of batteries permitted in each package as “not restricted” has been significantly reduced. Lithium metal batteries are restricted to 2.5 kgG per package and lithium ion batteries to 10 kgG per package. The format of the packing instructions and the numbers assigned are aligned with the reformatted packing instructions that will apply for the other packing instructions from 1 January 2011 as shown in Appendix H.

F. Packaging Specifications and Performance Tests.

1. 6.4.4 – Has been revised to incorporate testing provisions for fuel cell cartridges containing liquefied flammable gas.

2. 6.5 – Has been completely re-written to reflect the changes in the UN Model Regulations.

G. Marking and Labeling.

1. 7.1.4.2 – Has been clarified that the UN specification markings on packagings inside an over pack must not be reproduced on the outside of the over pack.

2. 7.1.6.3 – Has been added to identify the marking requirements for packages containing environmentally hazardous substances, liquid or solid (UN 3077 or UN 3082). Included with this is a new environmentally hazardous substances mark, Figure 7.1.B.

3. 7.2.4.2 – Identifies that a redesigned Cargo Aircraft Only label has been introduced (Figure 7.4.C). The existing design label may continue to be used until 31 December 2012 to provide shippers, freight forwarders and operators with sufficient time to exhaust stock of the current label.

4. 7.4.8 – The existing dangerous goods in excepted quantities label has been deleted. A new 7.4.8 has been added to reflect the handling label required for packages containing lithium metal or lithium ion batteries.

H. Documentation.

1. The provisions of Section 8 have been revised to allow the shipper to use electronic data transmission of the information required on the Shipper's Declaration in lieu of a paper document provided that the shipper has the agreement of the operator to accept electronic data transmission.

2. 8.1.6.9.2(c) – The paragraph has been revised to identify that for dangerous goods where Table 4.2 shows “no limit” or has a packing instruction reference, the quantity shown on the Shipper's Declaration for substances must be the net quantity (weight or volume). For articles it must be the gross weight.

I. Handling.

1. 9.1 – Acceptance. The requirements for acceptance of dangerous goods have been restructured and the specific items identified under acceptance checklist have been expanded.

2. 9.3.4 – The provisions for loading of Cargo Aircraft Only dangerous goods have been significantly revised. It will no longer be necessary for every package bearing a CAO label to be visible when loaded accessible to the flight crew. In addition it will be possible for CAO dangerous goods that previously had to be accessible to be loaded in Class C under floor cargo compartments.

3. 9.3.5 – The loading and securing requirements have been revised to reinforce that packages containing dangerous goods must be protected from damage, including by movement of other goods loaded in the compartment.

4. 9.5.1.1 – The NOTOC requirements have been revised to allow for the average gross weight per package to be shown for ID 8000 – Consumer commodities. For dry ice it will be sufficient to indicate the total quantity in each hold.

5. 9.5.3 – Notices displayed at airports providing information for passengers must, from 1 January 2010, include visual examples of the dangerous goods forbidden in passenger baggage.

6. 9.6.1 – A note has been added to the provisions for reporting of dangerous goods accidents and incidents to identify that even substances or articles shipped as “not restricted” through compliance with a special provision are still subject to the reporting requirements if there is a leak, spill, fire, or other incident/accident involving the material.

J. Radioactive Material. Section 10 has been significantly restructured based on changes to the UN Model Regulations. The restructure has expanded Subsection 10.3 – Classification to identify that for radioactive materials the assignment of the proper shipping name is determined by the radionuclide A1 or A2 together with the type of package. Subsection 10.3 now includes the table listing the A1 and A2 values for common radionuclides, previously Table 10.4.B, as well as much of the text from Subsection 10.5 that dealt with the activities of radionuclides permitted in the different types of packages.

K. Appendices.

1. Appendix B – A new paragraph has been added to identify that all references to gas pressures in the DGR refers to gauge pressure.

2. Appendix C – The list of currently assigned organic peroxides shown in Table C.2 has been revised to include new organic peroxides.

3. Appendix D – List of IATA Member, Associate Member and other airlines has been deleted. All subsequent appendices have been renamed. Contact details for competent authorities have been updated.

4. Appendix E – Changes to E.1 and E.2.

5. Appendix F – The list of Sales Agents and IATA Accredited Training Schools have been revised.

6. Appendix H – A new Appendix H has been added for this edition. This appendix contains the reformatted packing instructions that will come into effect 1 January 2011 for Classes 3, 4, 5, Division 6.1, Classes 8 and 9.

7. Appendix I – Is a listing by UN number and packing group that shows the existing packing instruction number and the new packing instruction number for limited quantity, passenger aircraft and Cargo Aircraft Only.