



DGP-WG/LB/1-IP/1
12/1/12

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP LB**

FIRST MEETING

Montréal, 6 to 10 February 2012

Agenda Item 6: Other business

LITHIUM BATTERIES

(Presented by PRBA — The Rechargeable Battery Association)

SUMMARY

The attached is presented for the working group's information.



December 12, 2011

Dr. Katherine Rooney
Secretary, Dangerous Goods Panel
International Civil Aviation Organization
999 University Street
Montreal, Quebec H3C 5H7
Canada

Dear Dr. Rooney:

I am responding to your request for information on air shipments of lithium ion cells and batteries. My apologies for the delay in responding.

Introduction

The proliferation of lithium ion batteries in consumer and industrial applications, the different shipping and logistics practices of lithium ion battery and electronic device manufacturers worldwide, and the significant role e-commerce (Internet sales) plays in the distribution of these products makes it impossible to provide a precise estimate on the annual air shipments of these materials. For example, one “shipment” or consignment could be a single replacement battery for a notebook computer or cellular phone or a pallet consisting of 20,000 lithium ion cells. What is certain, however, is that lithium ion batteries and lithium ion battery-powered products, when compared to lithium metal batteries and lithium metal-powered products, tend to be higher valued and have a shorter product cycle time – all characteristics that result in higher use of air transportation.

PRBA 2010 Economic Analysis

An economic analysis prepared for PRBA in 2010 in response to a U.S. Department of Transportation rulemaking on lithium batteries showed that 67% of imported cellular phones, 81% of imported notebooks and 69% of imported lithium ion cells and battery packs moved via air to the United States in 2009. A copy of the report is attached for your convenience.

Manufacturing Data

To facilitate ICAO’s further analysis, we thought it would be helpful to provide you with manufacturing data on the number of lithium ion cells and batteries and portable devices

powered by lithium ion cells and batteries. Attached is a presentation from Hideo Takeshita with the Institute of Information Technology that contains manufacturing data on secondary (rechargeable) cells and batteries. Page 5 of Mr. Takeshita's presentation shows that approximately 4.4 billion lithium ion cells will have been manufactured in 2011. By 2020, it is estimated that 6.5 billion lithium ion cells will be manufactured annually. The overwhelming majority of these cells currently are manufactured in China, Japan and Korea.

The two leading consumer products that utilize lithium ion cells and batteries are cellular phones and notebook computers (NBPC). Page 4 of Mr. Takeshita's presentation shows that approximately 231 million notebooks and 1.4 billion cellular phones will be manufactured in 2011. Page 4 also has an interesting chart showing the number of lithium ion cells manufactured for use in various consumer products. A copy of that chart also is provided below.

(M cells/CY)	CY 09	CY 10	CY 11
NBPC	973.6	1,285.1	1,446.8
Cellular	1,247.0	1,498.7	1,649.6
PT	133.1	230.6	296.1
DSC	137.9	171.1	186.6
CAM	61.1	66.7	68.3
DMP	90.6	81.8	84.5
Game	63.5	72.6	108.9
Others	359.7	482.1	591.2
(BT)	48.8	50.4	52.2
(PND)	58.1	51.6	53.6
(PDVD)	15.5	17.9	19.1
(Tablet/Slate)	11.8	64.0	129.0
(Ebike/Pedelec)	31.8	50.7	63.9
(Broadband/IPphone)	27.6	51.8	51.0
(UPS)	1.8	5.9	7.2
(Sanitary)	24.8	29.3	39.5
(Others)	139.6	160.9	175.8
Total	3,066.6	3,888.6	4,431.8
YOY	-2%	27%	14%

Logistics of Shipping Lithium ion Cells and Batteries

It is helpful to have a general understanding of the logistics of shipping lithium ion cells and batteries and products containing them and the distinction between shipping cells and batteries. Each of these product flows (*i.e.*, cells, batteries, products packed with or containing cells and/or batteries) have distinct patterns for the use of air transportation.

Lithium ion cells are typically assembled into batteries (often referred to as "battery packs") that are then either "married" or "kitted" with a final consumer product (in a separate pack or installed) and shipped

or shipped separately and matched with the final product in another country. A typical lithium ion battery pack for a notebook computer has inside it between five and nine lithium ion cells. In contrast, cellular phone batteries contain a single lithium ion cell.

These batteries also are shipped for sale as extra or replacement power sources, often shipped directly to final users, distribution centers or retailers (including Internet sellers).

It would be incorrect to assume that a lithium ion cell or battery (or product containing it) will be shipped by air only once during product distribution. In reality, an affected product delivered to a final user may experience multiple air movements as part of a multi-modal journey, often under the control of different parties (*e.g.*, manufacturing, third-party distribution company and retailer).

Conclusion

Lithium ion battery and electronic product manufacturers obviously rely heavily on air transportation and have very sophisticated global logistics operations. Therefore, it is important for the ICAO DGP to recognize that significant changes to the lithium ion battery provisions in the ICAO Technical Instructions will affect all aspects of these global logistics operations.

I would be glad to discuss these issues in more detail, including PRBA's economic analysis and the data in Mr. Takeshita's presentation. I can be reached at 202.719.4109 or gkerchner@wileyrein.com.

Sincerely,

George A. Kerchner

George A. Kerchner
Executive Director

Attachments

cc: Geoff Leach (w/ attachments)

13385820.1