



NOTE DE TRAVAIL

GROUPE D'EXPERTS SUR LES MARCHANDISES DANGEREUSES (DGP)

VINGT ET UNIÈME RÉUNION

Montréal, 5 – 16 novembre 2007

- Point 2 :** **Élaboration de recommandations relatives à des amendements des *Instructions techniques pour la sécurité du transport aérien des marchandises dangereuses* (Doc 9284) en vue de l'édition de 2009-2010**
- Point 5 :** **Dans la mesure du possible, règlement des questions non répétitives déterminées par la Commission de navigation aérienne ou par le groupe d'experts**
- 5.4 :** **Examen des dispositions relatives aux marchandises dangereuses liées aux piles au lithium**

ANALYSE DES INCIDENTS « CONNUS OU SOUPÇONNÉS » CONCERNANT DES PILES ET ACTUALISATIONS CONCERNANT LES ACTIVITÉS DE L'INDUSTRIE RELATIVE AUX QUESTIONS LIÉES AU TRANSPORT DES PILES AU LITHIUM

(Note présentée par la Portable Rechargeable Battery Association)

AVERTISSEMENT

Faute de ressources, seuls le sommaire, la suite à donner par le Groupe DGP et les amendements apportés au Doc 9284 ont été traduits.

SOMMAIRE

La présente note contient une analyse des incidents « connus ou soupçonnés » concernant des piles ainsi qu'une mise à jour sur les activités de l'industrie en rapport avec les questions relatives au piles au lithium dans le transport.

1. INTRODUCTION

1.1 At the 31st session of the UN Subcommittee of Experts on the Transport of Dangerous Goods the expert from the United States submitted INF paper UN/SCETDG/31/INF.41 that contained a list of "known or suspected battery incidents." The list has been cited by the expert from the United States as providing useful clues for considering and establishing corrective actions. The Portable Rechargeable Battery Association (PRBA) has reviewed the list of known or suspected battery incidents and provides the following observations.

1.2 The list from UN/SCETDG/31/INF.41 is attached as Appendix B but it has been amended by PRBA with the addition of a column identified as “**Observations/Comments.**” It is important to note that PRBA has identified three “incidents” on the chart that we believe should not be identified as “battery incidents.” These include the 11 June 2007 incident involving a Piper-Cherokee plane in Alaska, the 9 March 2007 incident involving a “power converter,” and the 11 November 2006 cell phone battery incident that occurred on the desk of a U.S. customs agent in California.

2. OBSERVATIONS

2.1 Below are charts that provide a summary of the incidents and their apparent causes. While there appears to be several reasons for these incidents, the majority of the incidents were caused by non-compliance with the current regulations that govern the transport of lithium batteries and equipment powered by them and passengers who failed to protect batteries from damage and short circuits. Therefore, PRBA does not believe significant revisions to the current lithium battery dangerous goods regulations are necessary.

Number of Lithium Battery Incidents Since 2000	Incidents Involving Passengers	Incidents Involving Commercial Shipments
23	10	13

Cause of 23 Lithium Battery Incidents		
Failure to Comply With Regulations	Design, Recall or Counterfeit	Other
14	7	2

2.2 PRBA and its counterparts in Europe and Asia recognize the concerns of the ICAO DGP and UN Subcommittee of Experts with regard to these incidents and, as more fully explained below, have taken action to address these concerns. However, it is important to recognize that what is missing from this list of incidents is any meaningful “root cause” analysis of the purported incidents. Such analysis is fundamental to determining whether existing regulations address all appropriate issues of concern.

3. INDUSTRY ACTIVITIES

3.1 Since the last ICAO working group meeting was held in Memphis, Tennessee, a significant amount of work has been accomplished by members of PRBA, RECHARGE, and Battery Association of Japan (BAJ) that will lead to improvements in lithium cells and batteries and significantly reduce the number of battery incidents even for non-compliant battery shipments. This work includes the following:

- a) Revisions to industry lithium battery standards from the International Electrotechnical Commission (IEC), Institute of Electrical and Electronics Engineers

(IEEE), and Underwriters Laboratories (UL) that will lead to improved cell and battery reliability.

- b) PRBA has developed a brochure on how to safely ship batteries and comply with the regulations that will be made available to members of ICAO DGP and UN Subcommittee of Experts. The brochure is designed to make it easier to understand the various transportation regulations that apply to different battery chemistries. PRBA intends to have the brochure translated to French, Spanish, Chinese, and Japanese and distributed internationally.
- c) PRBA has identified and met with trade associations whose members utilize lithium batteries in their products in order to educate them on the requirements of the dangerous goods regulations. For example, PRBA has met with industry trade groups representing the audio/video industries and remote control toy (hobby) industry.
- d) PRBA, RECHARGE, and BAJ are hosting an international forum on regulatory issues affecting the rechargeable battery industry that is scheduled for 20 to 21 September 2007 in Washington, DC. The first day of the forum will be devoted to transport issues affecting the rechargeable battery industry. This forum will be attended by representatives of over fifteen battery and electronic industry organizations from around the world.
- e) PRBA worked closely with the U.S. Department of Transportation and Transport Canada to develop a new emergency response guide for lithium ion cells and batteries that will be incorporated into the 2008 Emergency Response Guidebook.
- f) PRBA recently met with Subcommittee 21A of the IEC and proposed adding information on the lithium battery dangerous goods regulations into the following two IEC battery standards:
 - 1) IEC 62133 — Secondary cells and batteries containing alkaline or other non-acid electrolytes — Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable application.
 - 2) IEC 62281 — Safety of primary and secondary lithium cells and batteries during transport.

4. RECOMMANDATIONS ET CONCLUSIONS

4.1 La PRBA en appelle aux membres du Groupe DGP de l'OACI et du Sous-Comité de l'ONU pour la diffusion de la brochure indiquant la manière d'expédier des piles en toute sécurité.

4.2 La PRBA recommande d'établir un protocole parmi les autorités compétentes pour partager tous renseignements concernant des incidents liés à des piles afin de mieux comprendre les causes fondamentales de ces incidents.

4.3 Pour simplifier la réglementation applicable aux petites piles et batteries au lithium et les rendre plus facilement compréhensibles, la disposition spéciale 188 du Règlement type de l'ONU et la disposition particulière A45 des Instructions techniques de l'OACI devraient être remaniées. Ce remaniement consisterait à supprimer les spécifications d'emballage de ces dispositions particulières et à

les placer dans une nouvelle instruction d'emballage. L'Appendice A ci-joint contient une proposition de disposition particulière A45 remaniée et de nouvelle instruction d'emballage. Cette proposition est fondée sur les modifications apportées à la disposition spéciale 188 du Règlement type de l'ONU adoptée à la 30^e session du Sous-Comité d'experts de l'ONU, en décembre 2006.

4.4 La PRBA s'oppose aux modifications du type de celles qui sont préconisées par la Fédération internationale des associations de pilotes de ligne, qui consisteraient à supprimer l'exemption prévue dans la disposition particulière A45 pour les petites piles et batteries au lithium ou à reclasser les piles et batteries au lithium métal de la classe 9 à la division 4.3. Ces propositions de modification ne feront que compliquer encore la réglementation des marchandises dangereuses et provoqueront un plus grand nombre d'expéditions non conformes.

APPENDICE A

PROPOSITION D'AMENDEMENT DES INSTRUCTIONS TECHNIQUES

Chapitre 3

DISPOSITIONS PARTICULIÈRES

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A45 Les piles et batteries au lithium présentées au transport ne sont pas soumises aux autres dispositions des présentes Instructions si elles satisfont aux conditions énoncées ci-après :

- a) pour une pile au lithium métal ou à alliage de lithium, le contenu de lithium n'est pas supérieur à 1 g, et pour une pile au lithium ionique, le contenu d'équivalent lithium n'est pas supérieur à 1,5 g le taux de wattheures n'est pas supérieur à 20 ;
- b) pour une batterie au lithium métal ou à alliage de lithium, le contenu total de lithium n'est pas supérieur à 2 g, et pour les batteries au lithium ionique, le contenu total d'équivalent lithium n'est pas supérieur à 8 g le taux de wattheures n'est pas supérieur à 100. Les batteries au lithium ionique qui font l'objet de la présente disposition porteront sur leur enveloppe extérieure une marque indiquant le taux de wattheures ;
- c) il a été démontré que le type de chaque pile ou batterie au lithium satisfait aux prescriptions de chaque épreuve de la sous-section 38.3 de la Partie 3 du *Manuel d'épreuves et de critères* de l'ONU ;
- d) les emballages répondent aux spécifications de l'instruction d'emballage XXX.
- ~~e) es piles et batteries sont isolées de manière à empêcher tout court circuit et sont placées dans des emballages robustes, sauf si elles sont montées dans des équipements ; et~~
- ~~e) sauf si les piles et batteries sont montées dans des équipements, chaque colis contenant plus de 24 piles ou 12 batteries au lithium doit en outre satisfaire aux prescriptions suivantes :~~
 - ~~1) chaque colis doit porter une marque indiquant qu'il contient des batteries au lithium et que des procédures spéciales doivent être appliquées dans le cas où il serait endommagé ;~~
 - ~~2) chaque expédition doit être accompagnée d'un document indiquant que les colis contiennent des batteries au lithium et que des procédures spéciales doivent être appliquées dans le cas où un colis serait endommagé ;~~
 - ~~3) chaque colis doit pouvoir résister à une épreuve de chute d'une hauteur de 1,2 m, quelle que soit son orientation, sans que les piles ou batteries qu'il contient soient endommagées, sans que son contenu soit déplacé de telle manière que les batteries (ou les piles) se touchent, et sans qu'il y ait libération du contenu ;~~
 - ~~4) les colis, à l'exception des colis contenant des batteries au lithium qui sont emballées avec un équipement, ne peuvent dépasser une masse brute de 30 kg.~~

Ci-dessus et ailleurs dans les présentes Instructions, l'expression « contenu de lithium » désigne la masse de lithium présente dans l'anode d'une pile au lithium métal ou à alliage de lithium, ~~sauf dans le cas d'une pile au lithium ionique, le « contenu d'équivalent lithium » en grammes est fixée à 0,3 fois la capacité nominale en ampères-heure.~~

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INSTRUCTION D'EMBALLAGE xxx

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La présente instruction d'emballage s'applique aux piles et batteries au lithium métal et aux piles et batteries au lithium ionique qui sont visées par la disposition particulière A45.

- a) Les emballages doivent être conformes aux dispositions des paragraphes 4.1.1.1, 4.1.1.3 et 4.1.1.9.
- b) Les piles et les batteries, exception faite de celles qui sont contenues dans un dispositif, seront emballées dans des emballages intérieurs qui les confinent entièrement. Elles seront protégées de manière à prévenir les courts-circuits, incluant une protection contre les contacts avec des matériaux conducteurs se trouvant à l'intérieur de l'emballage lui-même qui pourraient provoquer un court-circuit.
- c) **Piles et batteries contenues dans un dispositif** — Lorsqu'elles sont contenues dans un dispositif, les piles et les batteries seront protégées des dommages et des courts-circuits et le dispositif sera équipé d'un moyen efficace pour prévenir une mise en marche accidentelle. Le dispositif sera emballé dans un emballage extérieur solide, construit en un matériau adéquat de résistance et de conception satisfaisantes par rapport à la capacité et à l'utilisation prévue de l'emballage.
- d) À l'exception des colis ne contenant pas plus de quatre piles contenues dans un dispositif ou pas plus de deux batteries contenues dans un dispositif, chaque emballage portera les marques suivantes :
 - 1) une indication que le colis contient des piles ou des batteries au « lithium métal » ou au « lithium ionique », selon le cas ;
 - 2) une indication que le colis doit être manipulé avec soin et qu'il y a un risque d'inflammabilité s'il est endommagé ;
 - 3) une indication qu'en cas d'endommagement du colis, des procédures spéciales devraient être suivies, incluant une inspection et un réemballage, s'il y a lieu ;
 - 4) un numéro de téléphone pour renseignements complémentaires.

Exemple de
marque tiré de
la norme 62281
de la CEI



IF DAMAGED

CAUTION!**Lithium Batteries inside****Handle with care****Flammable if damaged**

If package is damaged,
batteries must be quarantined,
inspected and repacked.

For information, call:

xyz

- e) Chaque expédition d'un ou plusieurs colis portant les marques indiquées à l'alinéa d) sera accompagnée d'un document contenant les renseignements suivants :
- 1) une indication que le colis contient des piles ou des batteries au « lithium métal » ou au « lithium ionique », selon le cas ;
 - 2) une indication que le colis doit être manipulé avec soin et qu'il y a un risque d'inflammabilité s'il est endommagé ;
 - 3) une indication qu'en cas d'endommagement du colis, des procédures spéciales devraient être suivies, incluant une inspection et un réemballage, s'il y a lieu ;
 - 4) un numéro de téléphone pour renseignements complémentaires.
- f) À l'exception des cas où des batteries au lithium sont contenues dans un dispositif ou emballées avec un équipement, les colis ne devraient pas excéder 30 kg en masse brute.

APPENDIX B

EXCERPT FROM INFORMATION PAPER UN/SCETDG/31/INF.41

“Known or Suspected Lithium Battery Incidents”

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
14-June-2007	Lithium CR123A	Ecoquest “Fresh Air Buddy” personal air purifier	While walking in the Long Beach, CA, airport terminal prior to flight, a passenger’s personal air filter worn around her neck exploded in a streak of fire. The battery was ejected at high speed across the terminal and melted the carpet where it came to rest. Passenger was uninjured but suffered scorching/burns on her clothing. <i>Incident is still under investigation.</i>	Product was subject to recall. Product was equipped with rechargeable lithium ion battery and non-rechargeable lithium metal battery of the same size. When non-rechargeable batteries are inadvertently charged by consumers, they have the potential to create a hazard.
11 June 2007	Lithium ion	Notebook computer	On June 11, 2007, a Piper Cherokee (PA-32) plane departed Kake Island Airport, AK (AFE) with two passengers, baggage and mail en route to Juneau, AK (JNU). Shortly after taking off, white colored smoke began pouring into the cockpit and cabin area from the forward baggage compartment. The smoke forced the pilot to return and make an emergency landing at AFE. The pilot and both passengers exited the aircraft safely, but the aircraft eventually caught fire and was destroyed. The forward compartment contained U.S. Mail and baggage including a laptop computer. The incident is still under investigation by the U.S National Transportation Board and a definitive cause has not yet been determined; however preliminary indications are that the laptop’s lithium battery pack is a potential candidate for the start of this fire.	U.S. National Transportation Safety Board (NTSB) has acknowledged that the laptop computer was not the source of fire. Incident should be removed from list.

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
5-June-2007	Lithium ion	Notebook computer	While waiting in the airport gate area, a passenger plugged his laptop computer into an electrical outlet on a column in the seating area. At some point the computer began smoking. Airline agent suggested the passenger unplug or shutoff the computer but passenger did not. The computer eventually burst into flames. Fire extinguishers were used to suppress—but not quickly extinguish—the fire.	<p>No failure analysis was performed on the battery. Battery may have been subject to recall, damaged or a counterfeit.</p> <p>Several industry standard organizations (i.e., IEEE, IEC, and UL) have taken steps to amend standards that apply to lithium ion cells, batteries, and notebook computers.</p>
15-May -2007	Lithium-ion battery pack for Sony PSP	No indication that battery was in or attached to Sony PSP device	Ramp worker removed checked bag that was on fire when loading passenger aircraft. Fire department determined that the fire was caused by a battery-pack for a Sony PSP handheld video game.	<p>Passenger did not comply with lithium battery carry-on provisions in Part 8.1.1.2(q) of the ICAO Technical Instructions and failed to properly protect batteries from short circuits.</p> <p>PRBA is working with government agencies and industry organizations to develop and distribute information to passengers on the proper care and handling of batteries carried aboard aircraft.</p>
10-May-2007	Lithium batteries		A driver smelled smoke in the cargo area of a delivery vehicle. The driver immediately removed the smoking package. The package did not burn or cause other damage. Investigation of the contents showed that the 30 lithium batteries were contained within the package and that some of them had short circuited. The carrier reported that the shipper used a plastic tray to hold the batteries, but that it did not provide sufficient protection against short circuit.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
19-Mar-2007	<p>“CR123” lithium metal</p> <p><i>Reportedly; battery fragments were disposed of by crew</i></p>	Possibly a camera	<p>1 ½ hours into a passenger flight from Buenos Aires to Miami a small explosion occurred in the Business Class section of the aircraft. There were sparks then a flash and smoke. Flight attendants, then the Captain, responded. Battery fragments were the only evidence found. It is suspected that the battery dropped into a seat and arced against a metal seat frame causing it to explode. The ruptured battery splattered debris on overhead bins. A fragment hit a passenger in the head burning her hair near her earlobe. Seven flight attendants were affected by smoke/fume inhalation. All refused medical treatment in Miami. One aircraft seat bottom and four seat covers were damaged and replaced.</p>	<p>There have been a number of recent reports regarding counterfeit CR123 lithium metal batteries. This incident appears to be the result of a counterfeit battery. PRBA and its members are working with various U.S. government agencies to raise awareness with consumers, government agencies, and battery and electronics trade associations regarding counterfeit batteries.</p>
9-Mar-2007	Lithium ion	Laptop computer and power converter.	Passenger flight from Toronto to Dallas/Ft.Worth diverted to St. Louis after strong electrical burning smell in the cabin. Source was laptop being used by a passenger while plugged in to aircraft power port via power converter. Power converter reportedly heated up. Aircraft power port and laptop reportedly in normal working condition afterwards.	This incident is not related to the battery and should be removed from the list.
1-Mar-2007	Twenty-four Surefire SF123A Lithium metal (non-rechargeable) batteries		US mail package from EBay internet vendor containing the batteries was transported on a passenger flight from LAX to Sydney and caught fire at the Sydney Mail Gateway Facility.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
10-Feb-2007	<p>Energizer lithium metal 9-volt, Energizer lithium metal AA, and IDX NP-L50S lithium ion batteries were all present.</p> <p>One Energizer lithium metal 9-volt was destroyed in the fire and seems most likely to be source of the fire.</p>	Packed with professional audio/video equipment	<p>While still climbing after takeoff from JFK, smoke began pouring from an overhead bin in the passenger cabin. Passengers alerted the flight attendants who responded. A flight attendant opened the bin and saw thick black smoke and flames in the rear of the bin. As the plane returned to the airport for an emergency landing flight attendants were able to put out the fire, discharging two Halon fire extinguishers. Water was applied to some cloth embers that continued to burn after the Halon was used.</p> <p>Cockpit crew smelled some light smoke in the cockpit and donned O2 masks for approx. 20 seconds until the smoke dissipated.</p> <p>Source of fire, bag with audio-video equip was secured in a lavatory. Aircraft landed and taxied to the gate. One passenger complained of chest pains and needed assistance in exiting the aircraft.</p> <p>The fire apparently was caused by loose batteries that were packed in a bag with other audio-video equipment.</p>	<p>Passenger failed to comply with lithium battery carry-on provisions in Part 8.1.1.2(q) of the ICAO Technical Instructions and did not properly protect batteries from short circuits.</p> <p>PRBA is working with government agencies and industry organizations to develop and distribute information to passengers on the proper care and handling of batteries carried aboard aircraft.</p> <p>PRBA also has met with industry trade organizations representing audio/video rental industry to educate their members on issues associated with batteries in transport.</p>
15-Dec-2006	One Lithium metal CR123A (probable)	“Fresh Air Buddy” personal air filter	<p>On a Houston-Portland passenger flight, a personal air filter, being worn on a strap around a passenger’s neck, started a fire in the cabin. The device started making hissing sounds and then emitted bright sparks/flash and a clap/bang sound. The passenger removed the device and it fell between two seat cushions where it continued to burn and smoke. Passengers dumped water on the device and then flight attendants put out the fire with a Halon fire extinguisher. The aircraft diverted to Colorado Springs. The passenger wearing the device suffered a superficial burn to his chest. Dozens of passengers were examined by EMT personnel, mainly for complaints related to inhalation of smoke and/or Halon fumes. Five or six passengers were taken to the hospital. The two fire-resistant aircraft seat cushions were replaced due to having holes burned in them.</p>	<p>Product was subject to recall. Product was equipped with rechargeable lithium ion battery and non-rechargeable lithium metal battery of the same size. When non-rechargeable batteries are inadvertently charged by consumers, they have the potential to create a hazard.</p>

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
14-Dec-2006	Counterfeit CR123A, lithium metal	Flashlight "Superfire WF-501B"	During a UPS cargo flight from Sydney, Australia to Guangzhou, China, at 38,000 ft., the crew heard a loud bang. A crewmember found that his flashlight in a bag next to his seat was warm and had a strong odor coming from it. The flashlight was opened and there was soot/residue from burning. One of the two batteries (now determined to be counterfeit) was damaged. Earlier the crewmember had dropped the flashlight about 6 inches into his bag and heard a thump.	As previously noted, there have been a number of recent reports pertaining to counterfeit CR123 lithium metal batteries. This incident appears to be the result of a counterfeit battery. PRBA and its members are working with various U.S. government agencies to raise awareness with consumers, government agencies, and battery and electronics trade associations regarding counterfeit batteries.
11-Nov-2006	Lithium ion cell phone batteries		After being shipped by air from China to the US, some batteries were selected for inspection by US Customs. While on the desk of an import specialist, the battery started emitting sparking flames and smoke.	This "incident" did not occur during transport and it is unclear what occurred prior to the battery being placed on the desk of the import specialist. Therefore, PRBA believes this "incident" should be removed from the list until additional information can be provided.
15-Sep-2006	Lithium-ion laptop battery	IBM Laptop computer	Approximately 15 minutes prior to departure of a LAX-LHR transatlantic flight, the laptop computer of a passenger began to smoke. The relief pilot and purser assisted the passenger in removing the laptop from the airplane. The laptop was placed on the floor of the gate area where it continued to smoke from the battery pack area and a small flame appeared. A customer service representative discharged a fire extinguisher on the fire. The battery pack continued to smoke for an additional couple minutes with white smoke and a strong odor. The Fire Department responded and discarded the burnt battery pack. The passenger stated the laptop was an IBM that belonged to his company and had been in his possession the entire time, having original parts and never having been serviced. The passenger was reportedly not using aircraft power to operate the computer. The airplane remained in service and departed on time without the incident passenger.	No failure analysis was performed on the battery. Battery may have been subject to recall, damaged or a counterfeit. Several industry standard organizations (i.e., IEEE, IEC, and UL) have taken steps to amend standards that apply to lithium ion cells, batteries, and notebook computers that include improved design and testing procedures.

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
17-Jul-2006	EaglePicher -Kokam Lithium ion/polymer (used for remote control models), 122 batteries of various sizes		The unlabeled/marked package was discovered to have caught fire while being held in bond for customs clearance in Korea. Package had traveled to Korea in FedEx system from Vienna via Paris and Subic Bay.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits, mark outer package, or provide shipping document pursuant to special provision A45.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>
02-June-2006	Lithium ion / polymer, 7.4-volt; 10000 mAh		An Air China passenger flight from Guangzhou to Chengdu diverted takeoff due to a lithium battery fire in the cargo hold. While taxiing for departure the fire alarm for the lower deck cargo compartment activated. The Captain immediately released the fire extinguisher and the aircraft stopped taxiing. Passengers were evacuated. A burnt package containing lithium polymer batteries was discovered in the cargo hold up against the ceiling of the compartment on top of the other packages. Burn marks were visible on the ceiling. Shipment was declared as electric parts; there was no indication of lithium batteries or Dangerous Goods. No UN test report was available for the batteries. Eleven other boxes were in the shipment.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
15-May-2006	Lithium-ion (VGP-BPL2/VGP-BPS2 or equivalent)	Laptop with spare battery	<p>Shortly before flight departure, a burning smell was detected in the first-class cabin of a Lufthansa ORD-MUC flight.</p> <p>Maintenance personnel were called to check and found it was coming from hand luggage inside an overhead luggage bin above seat 2A. The flight attendants evacuated the passengers in first class and first 2 rows of coach class. Crew used extinguishers to prevent setting off what was seen as the beginning of a slow fire. Maintenance immediately brought the bag outside the aircraft onto the ramp where it started to catch fire. Fire dept was called to assist. Fire was eventually put out after reigniting once. Fire apparently started from the extra battery pack for a laptop which was purchased on eBay. Flight departed 1 hour 18 minutes late.</p>	<p>Passenger failed to comply with lithium battery carry-on provisions in Part 8.1.1.2(q) of the ICAO Technical Instructions and did not properly protect batteries from short circuits.</p> <p>PRBA is working with government agencies and industry organizations to develop and distribute information to passengers on the proper care and handling of batteries carried aboard aircraft.</p>
03-Mar-2006	Lithium ion button cells, mfr. by Lixing		US-bound package was noticed to be smoking at outbound FedEx station in Shenzhen, China. Upon inspection, the package of lithium ion batteries was discovered to be on fire.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
29-Jun-2005	Lithium Ion	Battery-pack	At UPS in Ontario, Calif., during unloading of a ULD from Shanghai, it was discovered that a fire had taken place inside the ULD. A package containing a lithium-ion battery pack was identified as the source of the fire. Upon discovery, the burnt package and its contents were cool to the touch and there was no smoldering evident.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits and did not declare it as a dangerous good. (Battery exceeded limitation of Special Provision A45 exception.)</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>
11-Feb-2005	Lithium battery, solid cathode, manufactured by Eagle Picher of Surrey, BC, Canada.	None	An undeclared package containing 18 lithium batteries caught fire while being unloaded from a conveyor belt at the FedEx facility in White Bear Lake, MN. FedEx cargo handlers report hearing a “pop” sound and then seeing the box “lifted” off the conveyor belt by the force. The shipment had flown from Los Angeles to Minneapolis and was to be trucked to Clear Lake, WI. Only one battery caught fire.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>
29-Oct-2004	Ultralife 9-volt lithium (traditional 9-volt form: rectangular with two terminals on top)	Camera equipment	Shortly after departure, the battery exploded in the hand of a cameraman traveling on the VP campaign plane of Sen. Edwards (the cameraman reportedly was in the process of changing batteries). It spewed shrapnel and ignited a fire in the seat which was extinguished by flight attendants and others. The flight crew declared an emergency and returned to Raleigh-Durham airport without further incident.	<p>Batteries do not “spew shrapnel.” This incident apparently was caused by an external short circuit when battery came in contact with another metal object. Incident highlights the need to better educate consumers and passengers on the safe handling of batteries, especially while aboard aircraft.</p> <p>PRBA is working with government agencies and industry organizations to develop and distribute information to passengers on the proper care and handling of batteries carried aboard aircraft.</p>

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
07-Aug-2004	Lithium-ion	Lithium-ion batteries assembled together in a plastic case	Prototype lithium batteries shipped under a competent authority approval from California to Europe apparently started a fire in a ULD during the loading process at the FedEx Memphis hub. The ULD had just been loaded for a transatlantic flight (Memphis-Paris). The ULD and many other packages in it were damaged/destroyed by fire. Shipment apparently was in violation of the DOT approval allowing the prototype battery to be shipped.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>
01-Apr-2004	CR123 lithium batteries	Flashlight	A flight attendant lent a passenger a flashlight which was recently purchased in Beijing. The passenger dropped the flashlight while it was on. Later the passenger put the flashlight in a seatback pocket. A few minutes later, the flashlight began to emit smoke and noxious fumes. The flashlight became so hot it could only be handled with oven mitts.	<p>As previously noted, there have been a number of recent reports pertaining to counterfeit CR123 lithium metal batteries.</p> <p>This incident appears to be the result of a counterfeit battery. PRBA and its members are working with various U.S. government agencies to raise awareness with consumers, government agencies, and battery and electronics trade associations regarding counterfeit batteries.</p>
12-Aug-2002	Lithium battery (excepted)	Samsung mini computer (palm pilot)	Burning odor detected by handlers at the Los Angeles FedEx inbound package sort center. Battery apparently short-circuited causing the bubble wrap in the package to burn and melt onto the unit.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>

DATE	TYPE OF BATTERY	DEVICE (if applicable)	INCIDENT SUMMARY	OBSERVATIONS/COMMENTS
12-Apr-2002	Lithium batteries	None	Lithium batteries shipped under exception by Abbott Labs did not have terminals protected from short circuit. Started fire inside package at FedEx Indy sort facility.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>
5-Mar-2002	Lithium batteries	None	A package containing lithium batteries transported in a delivery truck was damaged by other freight. The damaged batteries initiated a fire.	Information is insufficient to determine whether shipper fully complied with the dangerous goods regulations or incident was the result of mishandling by carrier.
03-Nov-2000	Hawker lithium sulphur dioxide batteries	None	While in route by road to the FedEx Cargo facility in Portland, OR, a lithium battery shorted and ruptured, burning its packaging. The shorted battery had long flexible protruding positive and negative terminals. Two FedEx drivers were treated at a hospital after inhaling fumes from the incident.	<p>Shipper did not comply with dangerous goods regulations and failed to pack batteries in such a way to prevent short circuits.</p> <p>PRBA, with the assistance of numerous battery and electronic trade associations, has developed materials for distribution internationally that explains the procedures for complying with the regulations including packaging batteries to prevent short circuits.</p>