



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-THIRD MEETING

Montréal, 11 to 21 October 2011

Agenda Item 5: Resolution, where possible, of the non-recurrent work items identified by the Air Navigation Commission or the panel:

5.1: Review of provisions for the transport of lithium batteries

LITHIUM BATTERIES IN THE POST

(Presented by the Universal Postal Union)

SUMMARY

This working paper presents the proposal to change the Technical Instructions for the Safe Transport of Dangerous Goods by Air to have small quantities of lithium batteries transported by post.

Action by the DGP: The DGP is invited to modify the ICAO Technical Instructions (TIs) for the Safe Transport of Dangerous Goods by Air, specifically Part 1 2.3.2, to include the small quantities of lithium batteries outlined in Appendix A and Appendix B at the earliest possible juncture.

1. INTRODUCTION

1.1 On 10 August 2010, circular letter was distributed to member countries informing them that the 2010 Postal Operations Council (POC) session had approved proposals to amend articles 15 (Items not admitted. Prohibitions) and 16 (Admissible radioactive materials and infectious substances) of the UPU Convention. This was in compliance with article 104.9.5 (Functions of the POC) of the General Regulations, which states that the POC may formulate proposals to amend the Convention between Congresses, which shall be submitted for the approval of member countries in accordance with the procedure stipulated in article 125 of the General Regulations.

1.2 On 18 October 2010, circular letter was distributed to member countries with an invitation to vote on proposed amendments to articles 15 and 16 of the Universal Postal Convention.

1.3 In total, 111 member countries participated in the vote

- 106 voted for the proposals
- three voted against the proposals; and

— two abstained

1.4 Under article 35.3 of the Convention, to become effective, proposals introduced between Congresses relating to the Convention and to its Final Protocol must obtain two thirds of the votes, and at least half of the member countries of the Union with the right to vote must have participated in the ballot.

1.5 Given the results of the ballot, the proposals meet the conditions necessary for their adoption, and articles 15 and 16 of the Universal Postal Convention will be amended accordingly.

1.6 These changes will allow member countries or designated operators to accept items containing a small quantity of lithium batteries installed in equipment (four or fewer lithium cells, or two or fewer lithium batteries), similar to the recent changes made for lithium batteries transported as cargo, in the 2009–2010 edition of the *Technical Instructions for the Safe Transport of Dangerous Goods by Air*, published by the ICAO. An alignment of the Technical Instructions and the new UPU provisions is necessary.

2. RELEVANT ISSUES

2.1 Lithium batteries have evolved in the consumer market and now are in many electronic devices

2.2 With the increase in e-commerce and the prevalence of online auction and shopping sites products with lithium batteries are inserted into the post (domestic and international)

2.3 The UPU has taken a very conservative but practical approach to allow lithium batteries (4 cells or 2 batteries installed in equipment) in the international post.

3. CHANGES TO UPU CONVENTION ARTICLES 15 AND 16; PROPOSED NEW LETTER POST AND PARCEL POST REGULATIONS

3.1 Convention change – Article 15 – Items not admitted. Prohibitions is attached as Annex 1 (Appendix A).

3.2 Convention change – Article 16 – Admissible radioactive materials and infectious substances is attached as Annex 2 (Appendix B).

3.3 Text of new article RL 131bis of the Letter Post Regulations is attached as Annex 3 (Appendix C).

3.4 Text of new article RC 120bis of the Parcel Post Regulations is attached as Annex 4 (Appendix D).

3.5 The date of entry into force of all changes was set at 1 October 2011 but in order to give the DGP the opportunity to review the proposal by the UPU the implementation date of all changes with regard to air transport was deferred as pending the approval of ICAO DGP

4. TRAINING

4.1 The UPU has developed training material and Operational Manual for UPU Designated Operators, attached as Appendix E and Appendix F. This training material emphasizes that there is a strict limit, in terms of the lithium metal or lithium ion cells and batteries installed in equipment, and the need that the senders of the mail items concerned should strictly follow Packaging Instructions 967 and 970 of the ICAO Technical Instructions.

4.2 Material will be distributed to all UPU member countries and posted on the UPU secure website for the staff training by designated operators

4.3 Training session will be offered through the UPU e-training course which has been operational since 2006 covering 42 subjects relating to postal operations including postal security. This course is available with 4 languages (English, French, Arab and Spanish). Training material has also been incorporated into the existing training material developed by the UPU Postal Security Group and will be delivered at regional training seminars.

5. SAFETY AND SECURITY

5.1 With the increase in e-commerce and the prevalence of online auction and shopping sites, products with lithium batteries are currently inducted into the postal mail stream (domestic and international). By accepting small quantities the post can provide detailed instructions on what is allowable and provide instructions on how to properly package.

5.2 In the event of accidents and incidents, airline operators should be explicitly allowed to undertake the necessary measures and should report to the relevant authorities as required by the ICAO Technical Instructions, Part 7, Chapter 4, paragraphs 4.4 and 4.5. This will be confirmed by the relevant Postal Operations Council body (Transport Group) during the upcoming fall meetings. The Transport Group will meet in Berne, Switzerland on Tuesday 25 October 2011.

5.3 With the recent developments surrounding the Yemen packages in October 2010, it became evident that a point of contact distribution list needed to be developed between the UPU and IATA to resolve alarms as a result of x-ray screening. Currently the UPU has phone and email contacts from over 100 countries. This list can be used to resolve any issues surrounding lithium batteries at point of origin, communication on any lithium battery issue or any other DG issue will be greatly enhanced. Procedures on sharing this information with civil aviation authorities need to be defined.

6. OPERATIONAL ISSUES

6.1 In order not to allow, in the mail stream, the mail items which contain equipment containing lithium batteries beyond the limit and which contain lithium batteries not installed in equipment, postal operators are asked to provide a strict check at the acceptance point. This check will be done by having a hearing process at the post office counter and checking the customs declaration prepared by the sender. The sales promotion staff of the postal operators will play a proactive role in the activity with their customers for the prevention of dangerous goods and prohibited items.

6.2 There is a strict limit in terms of the mail items which can contain equipment containing lithium batteries and for which there are no conditions about the labelling for identification. The identification between the mail items containing equipment with installed lithium batteries and the other mail items will be made by post office counter staff through the check process mentioned above.

APPENDIX A

ANNEX 1

Convention – Proposal

Article 15
Items not admitted. Prohibitions

POSTAL OPERATIONS COUNCIL

Amend paragraph 3.3.3 as follows:

- 3.3 Exceptionally, the following dangerous goods shall be admitted:
- 3.3.1 the radioactive materials sent in letter-post items and postal parcels mentioned in article 16.1;
 - 3.3.2 the infectious substances sent in letter-post items and postal parcels mentioned in article 16.2;
 - 3.3.3 the lithium cells and lithium batteries sent in letter-post items and postal parcels mentioned in article 16.3.

Reasons. – The aim of the proposal is to allow designated operators to accept items containing a small quantity of lithium batteries installed in equipment (four or fewer lithium cells, or two or fewer lithium batteries) in view of the recent changes made in the 2009–2010 edition of the Technical Instructions for the Safe Transport of Dangerous Goods by Air, published by the International Civil Aviation Organization (ICAO).

Please refer to document POC PSG 2010.1–Doc 5.Rev 1 available at www.upu.int/en/resources/documentation-centre/poc-documents.html, which provides further details of this proposal.

APPENDIX B

ANNEX 2

Convention – Proposal

Article 16
Admissible radioactive materials and infectious substances

POSTAL OPERATIONS COUNCIL

Amend the title and add the following new paragraph 3:

Admissible radioactive materials, ~~and~~ infectious substances and lithium cells and lithium batteries

- 3 A maximum of four lithium cells or two lithium batteries, installed in equipment, shall be admitted in letter-post items and parcels under the following conditions:
 - 3.1 for a lithium metal or lithium alloy cell, the lithium content shall not be more than 1 g, and for a lithium ion cell, the Watt-hour rating shall not be more than 20 Wh;
 - 3.2 for a lithium metal or lithium alloy battery, the aggregate lithium content shall not be more than 2 g, and for a lithium ion battery, the Watt-hour rating shall not be more than 100 Wh; lithium ion batteries subject to this provision shall be marked with the Watt-hour rating on the outside case;
 - 3.3 cells and batteries, when installed in equipment, shall be protected from damage and short circuit, and the equipment shall be equipped with an effective means of preventing accidental activation; when lithium batteries are installed in equipment, they shall be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the batteries are afforded equivalent protection by the equipment in which they are contained;
 - 3.4 each cell or battery shall be of the type proved to meet the requirements of each test in the United Nations Manual of Tests and Criteria, Part III, sub-section 38.3.

Reasons. – Consequential proposal to the proposal to amend article 15.

APPENDIX C

ANNEX 3

POSTAL OPERATIONS COUNCIL

Letter Post Regulations – Proposal

POSTAL SECURITY GROUP

Create the following new article RL 131bis:

Article RL 131bis

Conditions of acceptance of letter items containing lithium cells and batteries installed in equipment

1 Letter-post items containing lithium metal or lithium ion cells and batteries installed in equipment shall be packed according to Packing Instruction 967, Section II (lithium ion cells and batteries), or Packing Instruction 970, Section II (lithium metal cells and batteries), as applicable, of the current edition of the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Technical Instructions) published by the International Civil Aviation Organization (ICAO). Senders must consult the most recent edition of the ICAO Technical Instructions.

2 Cells and batteries installed in equipment that have been identified by the manufacturer as being defective for safety reasons, or that have been damaged, or that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport.

Commentary

131bis.1 and 2: As the EMS Standard Agreement contains no provisions on lithium cells and batteries, they will be accepted in EMS items under the same conditions, in accordance with article RL 251.2.

131bis.1: In case of any accidents or incidents during the transport of such items, the International Bureau recommends that designated operators report the transport of such items to the International Bureau, and to the appropriate authorities in the operator's country and in the country in which the accident or incident occurred, in accordance with the reporting system of those appropriate authorities.

131bis.2: This paragraph also refers to such items returned to the manufacturer for safety reasons.

APPENDIX D

ANNEX 4

POSTAL OPERATIONS COUNCIL

Parcel Post Regulations – Proposal

POSTAL SECURITY GROUP

Create the following new article RC 120bis:

Article RC 120bis

Conditions of acceptance of parcels containing lithium cells and batteries installed in equipment

1 Parcels containing lithium metal or lithium ion cells and batteries installed in equipment shall be packed according to Packing Instruction 967, Section II (lithium ion cells and batteries), or Packing Instruction 970, Section II (lithium metal cells and batteries), as applicable, of the current edition of the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Technical Instructions) published by the International Civil Aviation Organization (ICAO). Senders must consult the most recent edition of the ICAO Technical Instructions.

2 Cells and batteries installed in equipment that have been identified by the manufacturer as being defective for safety reasons, or that have been damaged, or that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport.

Commentary

120bis.1: In case of any accidents or incidents during the transport of such items, the International Bureau recommends that designated operators report the transport of such items to the International Bureau, and to the appropriate authorities in the operator's country and in the country in which the accident or incident occurred, in accordance with the reporting system of those appropriate authorities.

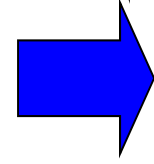
120bis.2: This paragraph also refers to such items returned to the manufacturer for safety reasons.

APPENDIX E
TRAINING MATERIAL

Acceptance of Postal Items containing Lithium Cells/Batteries

Lithium batteries installed (contained) in equipment can be accepted by the post under certain conditions

Currently, lithium batteries, except button batteries, cannot be sent by the international mail (letter-post items, parcels and EMS). The relevant provisions of the Universal Postal Convention were amended, and lithium cells and batteries installed (contained) in equipment can be accepted under certain conditions by the post from March, 2012.



What conditions?

■ Conditions for acceptance (summary)

1. Conditions about cells and batteries
2. Conditions about installing and packaging
3. Conditions specified by destination countries




1. Conditions about batteries

Lithium cells and batteries satisfying all of the following conditions can be accepted by the post.

<Conditions>

- A. The lithium content or the watt-hour rating does not exceed the specified value.
- B. A maximum of four lithium cells and two lithium batteries installed in equipment.
- C. Each cell and battery shall be of the type proved to meet the requirements of each test in the United Nations Manual of Tests and Criteria, Part iii, sub-section 38.3.
- D. Lithium cells and batteries shall not be those that are identified by the manufacturer as being defective for safety reasons.
- E. Lithium cells and batteries shall not be those that have been damaged.
- F. Lithium cells and batteries shall not be those that have the potential for producing a dangerous emission of heat or fire or for short circuiting.

Detailed Conditions for Acceptance

Type of cells/batteries	Type	Conditions for Acceptance		Remarks
		Lithium content	Watt-hour rating	
Lithium metal battery Lithium alloy battery (In general, non-rechargeable)	Cell 	Up to 1 g <i>Note: The amount of lithium content is not usually displayed.</i>	-	* In general, the following equipment is considered to contain lithium batteries meeting the conditions: - mobile phones - digital cameras, video cameras - laptop computers ** In general, the following equipment uses lithium batteries exceeding the conditions for acceptance by the post: - electronic bicycles - electronic wheelchairs - automatic external defibrillators (AED) - in-house power generators - industrial instruments
	Battery	Up to 2 g	-	
Lithium ion battery Lithium polymer battery (In general, rechargeable)	Cell 	-	Up to 20 Wh.	Note: Lithium ion batteries manufactured after 1 January 2009 are required to be marked with the watt-hour rating.
	Battery 	-	Up to 100 Wh.	

What lithium batteries can/cannot be accepted by the post?

		Packing Conditions	Labeling (ICAO TI)	International Post
Lithium batteries alone	Conceptual picture		<p>A "Lithium Battery Label" must be placed on the item.</p> <p>Lithium Battery Label (DGR Figure 7.4J)</p> <p>CAUTION!</p> <p>DO NOT LOAD FOR TRANSPORT PACKAGE IF DAMAGED</p> <p>For more information, call XXXXXXXX</p> <p>Must indicate "Lithium ion battery" or "Lithium metal battery", as appropriate.</p>	<p>Acceptable from March 2012, owing to the revision of the Universal Postal Convention</p>
	Lithium cell	Lithium battery		
Lithium batteries packed with equipment			<p>A "Lithium Battery Label" is NOT necessary.</p>	<p>○</p>
	Lithium batteries installed in equipment	<p>More than 4 cells</p> <p>More than 2 batteries</p>		
<p>4 or fewer lithium cells and 2 or fewer batteries</p>				

2. Conditions about installation and packaging

Lithium batteries shall be adequately packed to prevent accidental activation leading to heat, fire or short circuits during transport.

Required conditions	
Conditions about installation in equipment	<ul style="list-style-type: none"> - Lithium cells and batteries shall be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit. - Equipment must be equipped with an effective means of preventing accidental activation. - The equipment must be packed in a strong outer packaging constructed of suitable materials of adequate strength and design in relation to the packaging's capacity and its intended use, unless the cell or battery is afforded equivalent protection by the equipment in which it is contained.
Conditions about packaging	<ul style="list-style-type: none"> - Equipment containing lithium cells or batteries must be assembled and closed when prepared for transport so as to prevent any loss of contents which might be caused under normal conditions of transport, by vibration or by changes in temperature, humidity or pressure (due to altitude, for example). The equipment must be packed, secured or cushioned in an outer packaging in such a way that it does not break under normal conditions of transport. - Equipment containing lithium cells or batteries must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.

3. Conditions of destination countries

Some destination countries may not accept lithium batteries sent by the post.

Note: A list of destination countries that do not accept lithium batteries sent by the post will be advised as soon as such information has been provided from the UPU International Bureau.

Attention!

Please check with **the list of prohibited articles** by destination country.

Operational Flow for Accepting Lithium Batteries

1. At the time of acceptance at the post office

Check as to whether the content meets the following conditions from the information filled on the customs declaration or from the sender's declaration.

- Whether the content is equipment containing acceptable lithium batteries.

Note: The following equipment may contain unacceptable batteries. Therefore, please do not accept it with explaining the reason to the sender, unless otherwise proved.

- electric bicycle, power-operated wheel, AED, in-house power generator, industrial instrument

- Whether lithium cells or batteries are installed in the said equipment.

Note: Lithium cells and batteries alone or those packed with equipment cannot be accepted by the post.

- The lithium content and the watt-hour rating
- The number of cells and batteries installed in the equipment
- Whether the destination country does not accept the batteries.

2. At the outward exchange office

Check the content on the customs declaration form. If it is equipment containing lithium batteries,

- Check the number of lithium cells and batteries by using an x-ray machine or other available means.

■ Equipment containing lithium cells and batteries which cannot be accepted by the post (examples)

Equipment	Manufacturer	Product image	Product model	Watt-hour rating
Electric bicycle	Yamaha		PAS Natura S	111 Wh
	Panasonic		ENE433	302 Wh
Power-operated wheel	Yamaha		JW Active	280 Wh
For automated guided vehicle	Meiden-sha		3ACB	7,200 Wh
	BAYSUN		ARCA-300	300 Wh
External battery	INAX		YOO-0015	300 Wh
	Yamada Denki		EP-1000	1,000 Wh
In-house power generator	ELIYY Power		NE-BTL2K	2,000 Wh
	Shinko Denki		LIM40-6	912 Wh
Industrial batteries (Electric vehicle, battery for basestation, solar power generator, etc.)	EDISON POWER		EPS25-7	648 Wh

Acceptable equipment containing lithium cells and batteries

(1) (Research results of product specifications)

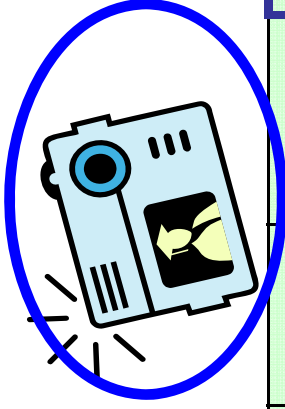


Mobile phone (examples)

Battery model	Voltage	Capacity	Watt-hour rating	Product model
SH002UAA	3.7 V	800 mAh	3.0 Wh	SH002/SH004/SH005
53TSUAA	3.7 V	700 mAh	2.6 Wh	W53T W54T W56T
41HIUAA	3.7 V	750 mAh	2.8 Wh	W41H W43H W43H II
61MAUAA	3.7 V	770 mAh	2.8 Wh	W62P/W61P
NEBAN1	3.8 V	800 mAh	3.0 Wh	931N・740N・741N
PMBAJ1	3.7 V	770 mAh	2.8 Wh	810P / 823P
SHBAV1	3.7 V	810 mAh	3.0 Wh	910SH
SHBBG1	3.7 V	820 mAh	3.0 Wh	922SH/920SH YK/920SH
SHBCU1	3.7 V	770 mAh	2.8 Wh	943SH/841SH
TSBAE1	3.6 V	880 mAh	3.2 Wh	813T/811T/810T/904T
	3.7 V	1,300 mAh	4.8 Wh	iPhone 3G 8GB

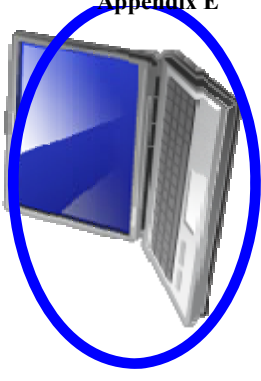
■ Acceptable equipment containing lithium cells and batteries

(2) (Research results of product specifications)



Digital camera (Examples)

Manufacturer	Product model	Product image	Battery model	Voltage	Capacity	Watt-hour rating
Sony	Digital camera (single-lens reflex) EOS-1D Mark IV		LP-E4	6.8 V	900 mAh	6 Wh
Canon	Digital camera (single-lens reflex) Handycam α380		NP-FH50	6.8 V	900 mAh	6 Wh
Pentax	Digital camera K-7		D-LI90	6.8 V	900 mAh	6 Wh
Sony	Digital camera DSC-HX5V		NP-BG1	3.7V	1,200 mAh	4 Wh
Fuji Film	Digital camera FinePix XP10		NP-45A	3.7V	720 mAh	3 Wh



Acceptable equipment containing lithium cells and batteries (3)

(Research results of product specifications)

Laptop computers (Examples)

Manufacturer	Battery model	Voltage (V)	Capacity (mAh)	Watt-hour rating (Wh)
Toshiba	PABAS023	14.8	5,850	87
Toshiba	PABAS027	10.8	3,600	39
Toshiba	PABAS031	14.8	6,450	95
NEC	PC-VP-BP37	11.1	4,800	53
NEC	PC-VP-WP66	14.8	4,400	65
Panasonic	CF-VZSU37U	11.1	7,650	85
Panasonic	CF-VZSU39U	7.4	5,100	38
Panasonic	CF-VZSU40AU	7.4	7,800	58
Sony	VGP-BPL9	11.1	7,800	87
Sony	VGP-BPS8	11.1	5,200	58
Sony	PCGA-BP2E/PCGA-BP2EA	11.1	4,600	51
Compaq	DCP-JP.6675NHP043	10.8	5,200	56
Compaq	DCP-JP.6683NHP058	14.4	4,800	69
Compaq	DCP-JP.3395NHP018.2	10.8	8,800	95
Dell	DEX1HSPR-03	11.1	4,600	51
Dell	DE5100GPR-03	14.8	6,600	98
IBM	BMR30BJPR-03	10.8	4,600	50
IBM	BMX40HLBPR-03	14.4	4,400	63
Lenovo	BM40Y6799-02	10.8	5,200	56

■ Acceptable equipment containing lithium cells and batteries

(4)



(Research results of product specifications)



Video cameras, walky-talkies and radio-controlled toys (Examples)

Manufacturer	Product model	Image of Product	Battery model	Voltage	Capacity	Watt-hour rating
Sony	Video camera MHS-CM5		NPBK-1	3.6V	970 mAh	3 Wh
ICOM	Transceiver IC-4100		BP-258	3.7V	750 mAh	3 Wh
Sony	Play Station PSP-1000		B000V6C59W	3.7V	1,800 mAh	7 Wh
Nie Eagles	Helicopter Swordfish SX		CP820152	7.4V	820 mAh	6 Wh
Tamiya	Radio-controlled car, RCC Jeep Wrangler		RC2400SP	7.2V	2,400 mAh	17 Wh

Frequently Asked Questions and Answers

1	<p>What is the difference between a lithium cell and a lithium battery?</p>	<p>A lithium cell is a single encased electrochemical unit consisting of one positive and one negative electrode that exhibits a voltage differential across the two terminals. A lithium battery is one or more cells electrically connected. A single cell battery is considered to be a cell and not a battery.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Cell (Examples)</p> </div> <div style="text-align: center;">  <p>Battery (Examples)</p> </div> </div>
2	<p>(1) What are lithium metal batteries? (2) What are lithium alloy batteries? (3) What are lithium ion batteries?</p>	<p>(1) Lithium metal batteries are those in which the metallic lithium is used for the negative electrode. (2) Lithium alloy batteries are those in which the lithium alloy is used for the negative electrode. (3) Lithium ion batteries are those in which oxidized metallic lithium is used for the positive electrode, and lithium ions move from the negative electrode to the positive electrode during discharge. Lithium metal batteries and lithium alloy batteries are generally non-rechargeable (primary batteries) and lithium ion batteries are rechargeable (secondary batteries).</p>
3	<p>What is the basis for defining the scope of lithium batteries acceptable by the post?</p>	<p>Lithium batteries that do not require a "Lithium Battery Label" according to the ICAO Technical Instructions, namely, those that meet all of the conditions specified in Part II of its Packing Instruction 967 and Packing Instruction 970, are acceptable by the post.</p>
4	<p>What are the reasons for lithium batteries packed with equipment not being accepted by the post while the same type and quantity of lithium batteries installed in equipment are accepted?</p>	<p>The scope of lithium batteries that do not require a lithium battery label is defined by the International Civil Aviation Organization (ICAO) as being that the equipment itself provides the required protection to prevent damage to or short-circuiting of the lithium batteries while loose batteries or batteries packed with equipment have a greater risk of short-circuiting.</p>
5	<p>Will all lithium batteries installed in equipment be accepted by the post?</p>	<p>In general, lithium cells and batteries used in most equipment marketed to consumers could be accepted by the post. The following equipment may contain lithium cells or batteries that are beyond the limitation and will not be accepted: - Cameras used at broadcasting stations, electric bicycles, electric wheelchairs, automatic external defibrillators (AED), in-house power generators, and industrial instruments.</p>
6	<p>Is the amount of metallic lithium contained in the lithium metal cells or batteries clearly indicated on them?</p>	<p>In general, the amount is not indicated. Most lithium metal cells are a type of coin called the "CR" type and they in general meet the specified condition for the post, except those used in automatic external defibrillators (AED).</p>

7	<p>How do I determine the watt-hour rating for a particular lithium ion battery? Is it indicated on the battery itself?</p>	<p>The watt-hour (Wh) rating is a measure by which lithium ion batteries are regulated. You can calculate the number of watt-hours your battery provides if you know the battery's nominal voltage (V) and the capacity in ampere-hours (Ah) as follows: (V) x (Ah) = Wh</p> <p>If only the milli-ampere-hours (mAh) are marked on the battery then divide that number by 1000 to get ampere-hours (Ah) (i.e. 4000 mAh/1000 = 4.4 Ah).</p> <p>Lithium ion batteries manufactured after January 1, 2009 are required to be marked with the watt-hour rating.</p>
8	<p>Can a laptop computer and a mobile phone be sent in one package by the post?</p>	<p>Most equipment marketed to consumers contains one lithium battery. The watt-hour rating of the lithium battery used for a laptop computer is in general below 100 Wh and that for a mobile phone is very small. Therefore, a laptop computer and a mobile phone can be sent by the post in one postal item.</p>
9	<p>Is a "Lithium Battery Handling Label" specified in the ICAO Technical Instructions necessary to be attached on a postal item containing lithium batteries installed in equipment?</p>	<p>No. If a "lithium battery handling label" is attached, the item may be regarded as containing lithium batteries that are not accepted by the post.</p>



APPENDIX F

OPERATIONAL MANUAL FOR ACCEPTING LITHIUM BATTERIES

Postal items (letter-post items, parcels and EMS) containing lithium cells and batteries can be accepted if they meet the following conditions:

1. Conditions about type and quantity

A maximum of four lithium cells or two lithium batteries installed in equipment

Note 1:

A lithium **cell** is a single encased electrochemical unit consisting of one positive and one negative electrode and exhibiting a voltage differential across the two terminals. A lithium **battery** is one or more cells electrically connected. A single cell battery is considered a cell and not a battery.

2. Conditions about cells and batteries

2.1 Watt-hour rating and lithium content are as follows:

2.1.1 Lithium cells

Type	Conditions
Lithium ion cell	The watt-hour rating shall not be more than 20 Wh.
Lithium metal cell	The lithium content shall not be more than 1 g.

2.1.2 Lithium batteries

Type	Conditions
Lithium ion battery	The watt-hour rating shall not be more than 100 Wh.
Lithium metal battery	The lithium content shall not be more than 2 g.

Note 2:

Lithium **metal** cells and batteries are generally non-rechargeable and contain metallic lithium. Lithium **ion** cells and batteries do not contain metallic lithium and are rechargeable.

Note 3:

In general, lithium cells and batteries used in most equipment marketed to consumers meet the watt-hour rating or the lithium content noted above. The following equipment may contain cells or batteries the content or the watt-rating of which **exceeds** the maximum value specified above:

- cameras used at broadcasting stations
- electric bicycles
- electric wheelchairs
- automatic external defibrillators (AED)
- industrial instruments
- in-house power generators

2.2 Each cell and battery shall be of the type proved to meet the requirements of each test in the United Nations Manual of Tests and Criteria, Part III, sub-section 38.3.

2.3 Cells and batteries shall not be ones that are identified by the manufacturer as being defective for safety reasons, that have been damaged, or that have the potential for producing a dangerous emission of heat or fire or for short circuiting.

3. Conditions about installation

- 3.1 Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same package that could lead to a short circuit.
- 3.2 Equipment must be equipped with an effective means of preventing accidental activation.
- 3.3 The equipment must be packed in a strong outer packaging constructed of suitable materials of adequate strength and design in relation to the packaging's capacity and its intended use, unless the cell or battery is afforded equivalent protection by the equipment in which it is contained.

4. Conditions about packaging

Postal items containing lithium metal or lithium ion cells and batteries installed in equipment shall be packed according to Packing Instruction 967, Section II (lithium ion cells and batteries), or Packing Instruction 970, Section II (lithium metal cells and batteries), as appropriate, of the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Technical Instructions) published by the International Civil Aviation Organization (ICAO).

Note 4:

Lithium cells and batteries which do not meet any one of the conditions above shall not be accepted by the post (including those not installed in equipment or packed with equipment).

— END —