

ADR 2025 - TRANSPORT RULES OF WEEE CONTAINING BATTERIES

Dr. Marco Ottaviani | Consultant | Dangerous Goods Safety Adviser, Battery Regulatory, Environmental and Safety Affairs

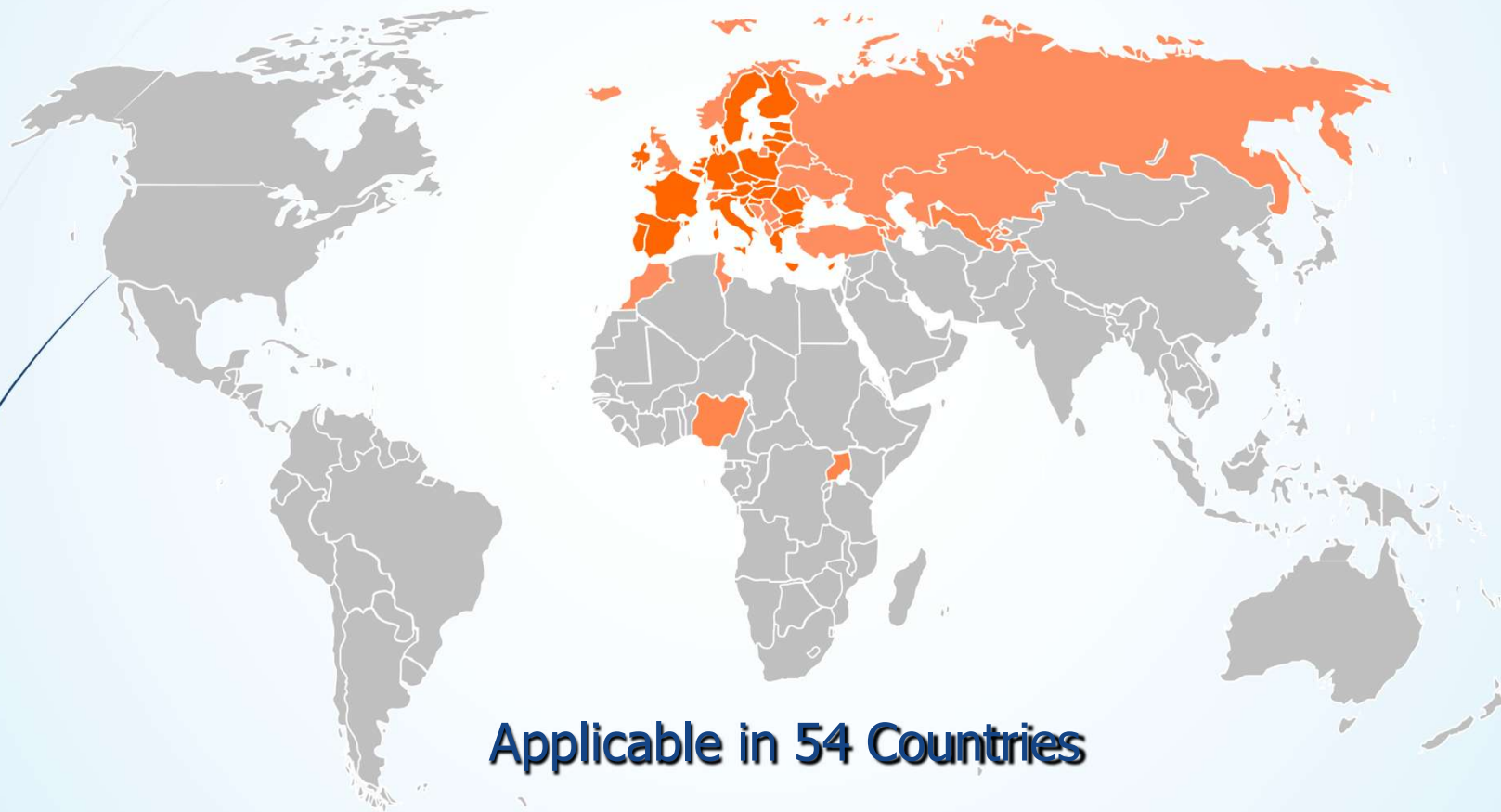


ADR 2025

Transport rules of WEEE containing batteries

Marco Ottaviani – Dangerous Goods Safety Adviser

ADR – Agreement concerning the international carriage of Dangerous goods by Road



Sodium ion Battery

Cells and batteries,
cells and batteries contained in equipment, or
cells and batteries packed with equipment

UN 3551

UN 3552

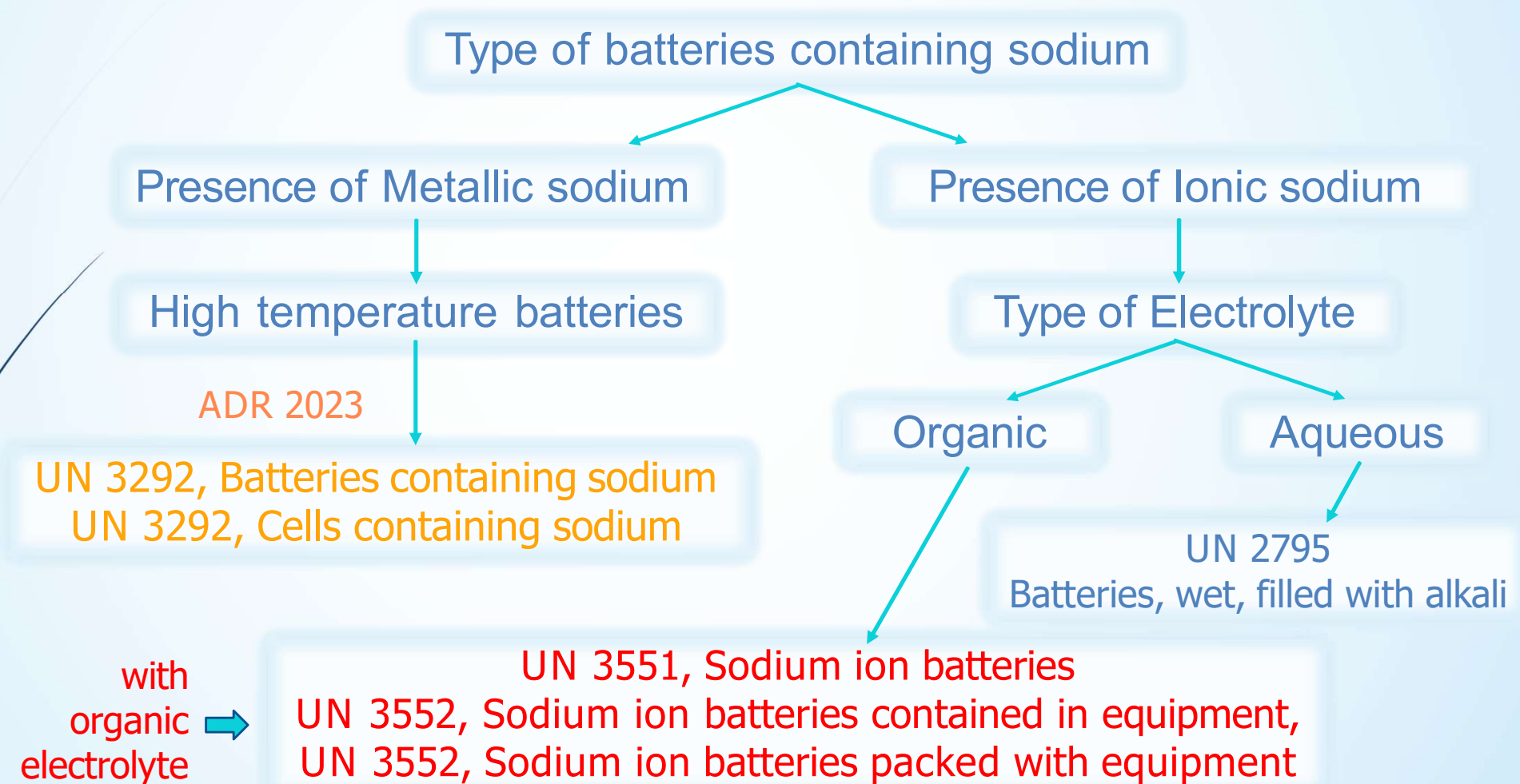
containing sodium ion, which are

a rechargeable electrochemical system where
the positive and negative electrode are both
intercalation or insertion compounds

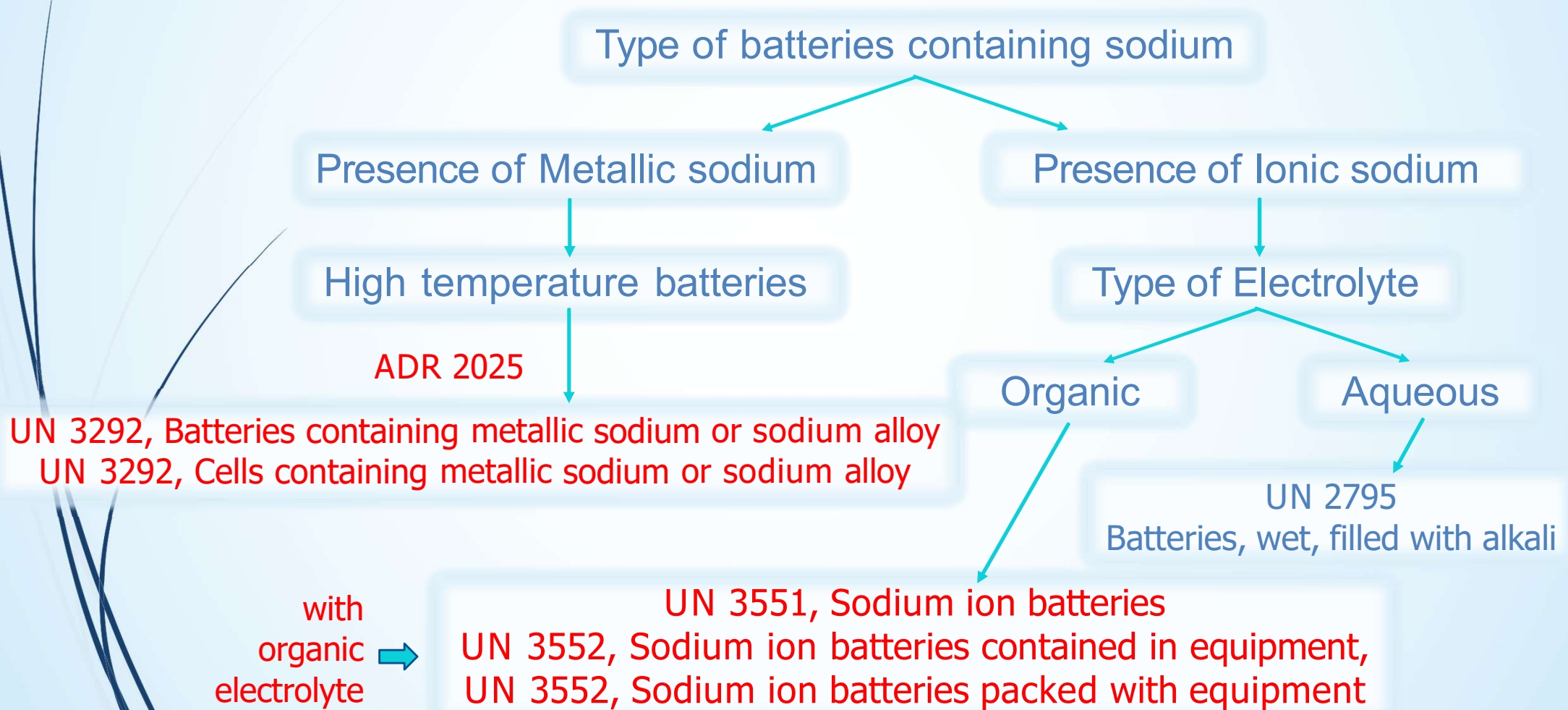
constructed with no metallic sodium (or
sodium alloy) in either electrode and with an
organic non aqueous compound as electrolyte

shall be assigned to UN Nos. 3551 or 3552, as appropriate

Batteries containing Sodium according ADR



Batteries containing Sodium according ADR



ADR

Special Provisions

Packing Instructions

UN No.	Name and description	Class	Classification code	Packing group	Labels	Special provisions	Limited and excepted quantities		Packaging			Portable tanks and bulk containers	
							3.4	3.5.1.2	Packing instructions	Special packing provisions	Mixed packing provisions	Instructions	Special provisions
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(10)	(11)
	3.1.2	2.2	2.2	2.1.1.3	5.2.2	3.3	3.4	3.5.1.2	4.1.4	4.1.4	4.1.10	4.2.5.2 7.3.2	4.2.5.3
3480	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	9	M4		9A	188 230 310 348 376 377 387 636 677	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906				
3481	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	9	M4		9A	188 230 310 348 360 376 377 387 390 670 677	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906				

ADR

Special Provisions

Packing Instructions

UN No.	Name and description	Class	Classification code	Packing group	Labels	Special provisions	Limited and excepted quantities		Packaging			Portable tanks and bulk containers	
							3.4	3.5.1.2	Packing instructions	Special packing provisions	Mixed packing provisions	Instructions	Special provisions
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9a)	(9b)	(10)	(11)
3551	SODIUM ION BATTERIES with organic electrolyte	9	M4		9A	188 230 310 348 376 377 400 401 636 677	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906				
3552	SODIUM ION BATTERIES CONTAINED IN EQUIPMENT or SODIUM ION BATTERIES PACKED WITH EQUIPMENT, with organic electrolyte	9	M4		9A	188 230 310 348 360 376 377 400 401 670 677	0	E0	P903 P908 P909 P910 P911 LP903 LP904 LP905 LP906				

Added by
ADR 2025

Special Provisions

Cells and Batteries ..

Carried
as batteries

Contained in Equipment,
Packed with Equipment

Li metal

UN 3090

UN 3091

Li ion

UN 3480

UN 3481

New

SP 188
SP 230
-
-
SP 387

SP 188
SP 230
SP 348
-
SP 387

SP 188
SP 230
-
SP 360
SP 387

SP 188
SP 230
SP 348
SP 360
SP 387
SP 390

Waste

SP 377, SP 636

SP 377, SP 670

Damaged or
Defective

SP 376, SP 677

Prototype

SP 310

ADR

Added by
ADR 2025

Special Provisions

Added by ADR 2025

Cells and Batteries ..

Carried
as batteries

Contained in Equipment,
Packed with Equipment

Na ion

UN 3551

UN 3552

SP 188
SP 230
SP 348
-
SP 387

SP 400
SP 401

SP 188
SP 230
SP 348
SP 360
SP 387
SP 390
SP400
SP401

Waste

SP 377, SP 636

SP 377, SP 670

Damaged or
Defective

SP 376, SP 677

Prototype

SP 310

ADR

Exemption related to quantities carried per transport unit

ADR § 1.1.3.6

Transport category and weight limits for different types of lithium and sodium ion batteries

Transport Category	Maximum total quantity per transport unit	Lithium batteries UN 3090, UN 3091, UN 3480, UN 3481 Sodium ion batteries UN 3551, UN 3552
0	0	Damaged and defective (critical)P911, LP906 liable to dangerously react during transport
1	20	
2	333	New and usedP903, LP903 WasteP909 Prototype and short production runP910, LP905 Damaged and defective (non critical)...P908, LP904
3	1000	
4	unlimited	

Fully regulated
+
DGSA

Partially exempted
It's not required:

- DGSA
- Driver ADR licence
- Placards
- Orange plate
- Fire Extinguishers for the load
- Safety Instruction

Added by
ADR 2025

SP 677 D&D critical cells and batteries → **transport category 0.**

In the transport document, add the words :

"Carriage in accordance with special provision 376. Transport category 0".

Packing Instructions

Added by ADR 2025

Cells and Batteries:

Carried
as batteries

Contained in Equipment, or
Packed with Equipment

Li metal

UN 3090

UN 3091

Li ion

UN 3480

UN 3481

Na ion

UN 3551

UN 3552

New

P 903, LP 903

Waste

P 909

Damaged or
Defective

P 908, LP 904

If liable to react during transport

P 911, LP 906

Prototype

P 910, LP 905

P = Packaging not exceeding 400 kg net weight

LP = Large Packaging (from 400 kg net weight up to a volume of 3 m³)

ADR

WEEE containing Lithium or Sodium Ion Batteries

“Equipment” means apparatus for which the lithium cells or batteries will provide electrical power for its operation.

SP 377

Equipment containing such cells and batteries carried for disposal or recycling, either packed together with or packed without non-lithium batteries

→ may be packaged in accordance with P909

→ packages shall be marked:

“LITHIUM BATTERIES FOR DISPOSAL” or

“LITHIUM BATTERIES FOR RECYCLING” or

“SODIUM ION BATTERIES FOR DISPOSAL” or

“SODIUM ION BATTERIES FOR RECYCLING”.

WEEE containing Lithium Batteries

Li metal

Li ion

UN 3090

UN 3480

UN 3091

UN 3481

Na ion

UN 3551

UN 3552

P 909 (3)

- Strong outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use.
- Packagings not approved
- Equipment may also be offered for carriage unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

WEEE containing Lithium and Sodium ion batteries

... could be not subject to ADR according SP 670

SP 670

Exempted due to type and function of batteries

- not the main power source for the operation of the equipment,
- other lithium or sodium cell or battery used as the main power source,
- protected by the equipment in which they are contained.

Exempted due to compliance to transport provisions

- non approved strong outer packagings,
- specially designed collection receptacles,
- constructed of suitable material and of adequate strength and design,
- measure to minimize the damage of the equipment when filling and handling,
- closed so as to prevent any loss,
- quality assurance system to ensure that transport unit does not exceed 333 kg of Li or Na batteries,
- marked "LITHIUM BATTERIES FOR RECYCLING" or "SODIUM ION BATTERIES FOR RECYCLING"

ADR

WEEE according SP 670

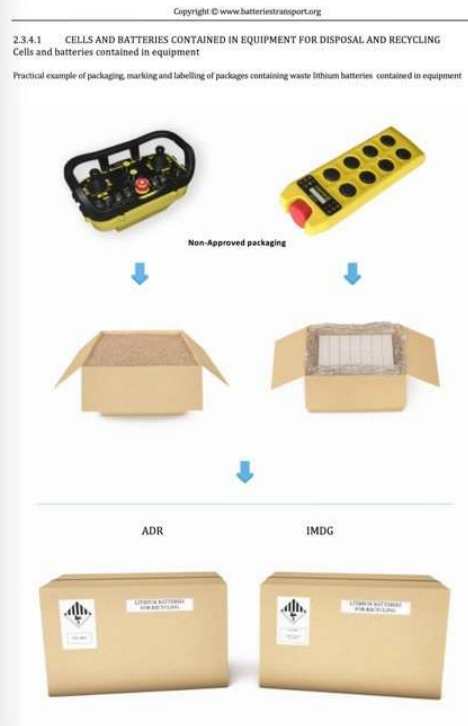
ADR
only

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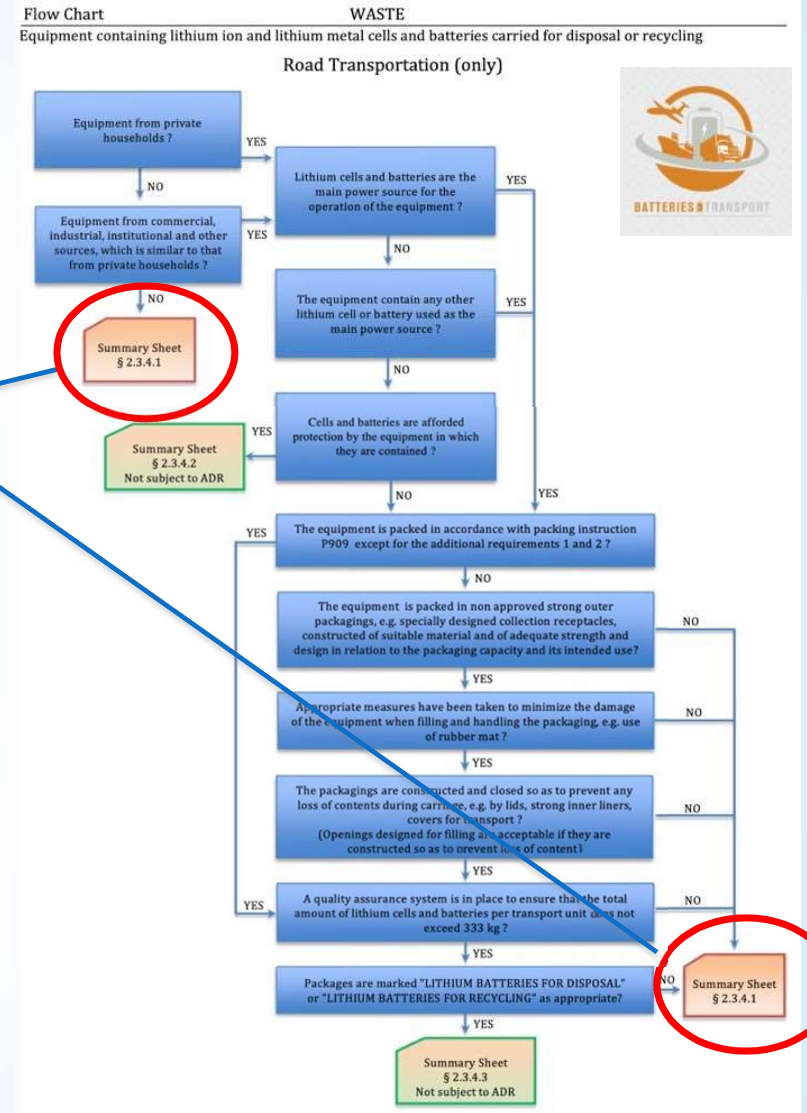
2.3.4.1 CELLS AND BATTERIES CONTAINED IN EQUIPMENT FOR DISPOSAL AND RECYCLING
Cells and batteries contained in equipment

WASTE							
Applies to:	Waste Lithium cells and batteries contained in equipment						
UN No., Proper Shipping Name:	UN 3481, LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3480, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT						
Class:	9						
Packing Group:	II or I						
Hazard Label:	<ul style="list-style-type: none"> Labels must be in the form of a square set at an angle of 45° (diamond-shaped) with minimum dimensions of 100 mm by 100 mm, except for air transport mode. Smaller dimensions may be used in the case of packages of such dimensions that they can only bear smaller labels. They must have a line 5 mm inside the edge and running parallel with it. 						
Prerequisite:	ADR						
Transport mode:	IMDG						
Packing instructions:	<p>PI909 PI910</p> <p>Strong outer packaging constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use.</p> <p>Packagings need not be approved.</p> <p>Equipment may be affixed for carriage unopened or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.</p>						
Additional requirements:	<p>Equipment may be affixed for carriage unopened or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.</p> <p>Cells and batteries shall be designed or packed to prevent short circuits and the dangerous evolution of heat.</p> <ul style="list-style-type: none"> Protection against short circuits and the dangerous evolution of heat includes, but is not limited to: <ul style="list-style-type: none"> Individual protection of the battery terminals. Inner packaging to prevent contact between cells and batteries. Batteries with recessed terminals designed to protect against short circuits, or the use of a non-conductive and non-combustible cushioning material to fill empty space between the cells or batteries in the packaging. Cells and batteries shall be secured within the outer packaging to prevent excessive movement during carriage (e.g. by using a non-combustible and non-conductive cushioning material or through the use of a tightly closed plastic bag) 						
Weight limit:	No limit						
Tunnel code:	01						
Transport cat.:	2						
Exemptions:	Chapter 1.1.3.6 limit of 333 kg net						
Marking and Labeling of Packages:	<table border="1"> <tr> <td>UN 3481 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3480 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT</td> <td>UN 3481 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3480 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>LITHIUM BATTERIES FOR DISPOSAL or LITHIUM BATTERIES FOR RECYCLING</td> <td>LITHIUM BATTERIES FOR DISPOSAL or LITHIUM BATTERIES FOR RECYCLING</td> </tr> </table>	UN 3481 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3480 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	UN 3481 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3480 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT			LITHIUM BATTERIES FOR DISPOSAL or LITHIUM BATTERIES FOR RECYCLING	LITHIUM BATTERIES FOR DISPOSAL or LITHIUM BATTERIES FOR RECYCLING
UN 3481 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3480 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	UN 3481 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or UN 3480 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT						
LITHIUM BATTERIES FOR DISPOSAL or LITHIUM BATTERIES FOR RECYCLING	LITHIUM BATTERIES FOR DISPOSAL or LITHIUM BATTERIES FOR RECYCLING						
Overpack:	OVERPACK + same labels as above						
Documents:	Transport document						

136



137



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WEEE according SP 670

ADR
only

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2.3.4.2 CELLS AND BATTERIES CONTAINED IN EQUIPMENT FOR DISPOSAL AND RECYCLING
Cells and batteries installed in Exempted Equipment from private households (SP 670 ADR only)

WASTE

Applies to:	Lithium ion and lithium metal cells and batteries installed in: i. equipment from private households, and ii. equipment which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households, collected and handed over for carriage for depollution, dismantling, recycling or disposal.		
UN No., Proper Shipping Name	n/a		
Class	n/a		
Packing Group	n/a		
Hazard Label	n/a		
Requirements:	→ They not subject to ADR if: a. lithium cells and batteries are not the main power source for the operation of the equipment in which they are contained; b. the equipment in which they are contained does not contain any other lithium cell or battery used as the main power source; and c. lithium cells and batteries are afforded protection by the equipment in which they are contained. <i>Note: Examples for cells and batteries covered by this summary sheet are button cells used for data integrity in household appliances (e.g. refrigerators, washing machines, dishwashers) or in other electrical or electronic equipment;</i>		
Transport mode	ADR	IMDG	IATA
Special Provision	670 (a)	n/a	n/a
Weight limit	n/a		
Tunnel code	n/a		
Transport cat.	n/a		
Exemptions	n/a		
Marking and Labelling of Packages	n/a		
Overpack	n/a		
Documents	n/a		

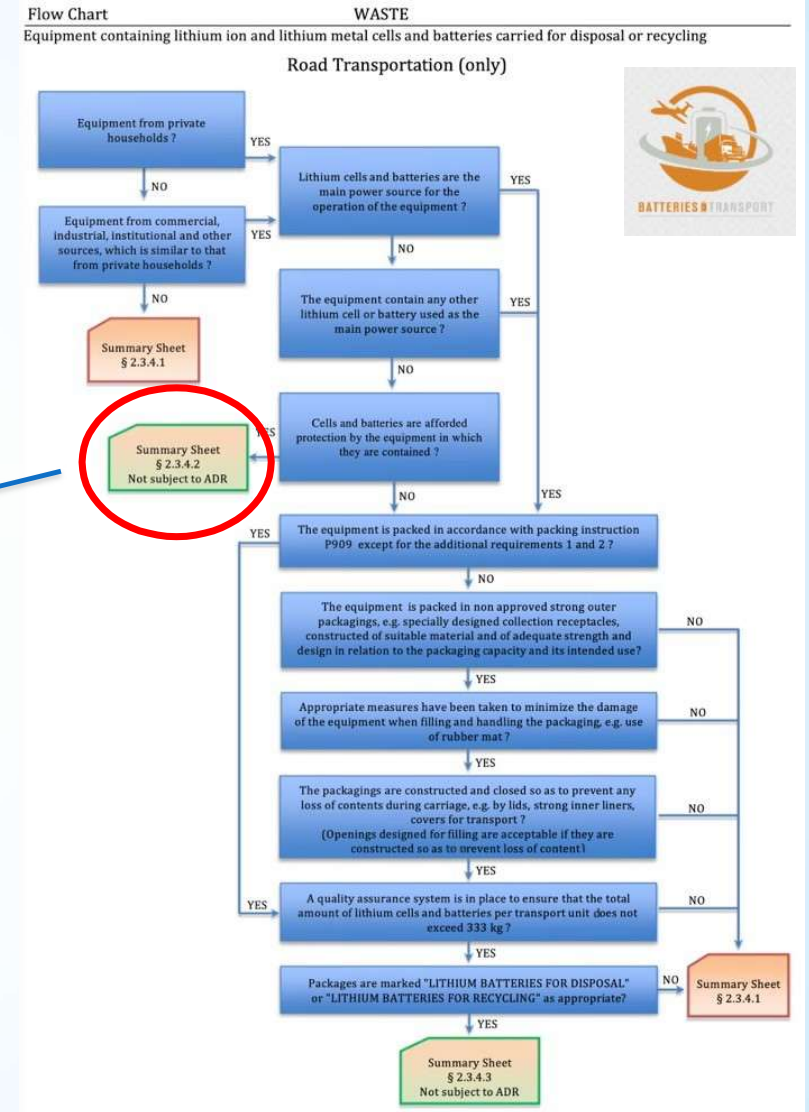
138

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2.3.4.2 CELLS AND BATTERIES CONTAINED IN EQUIPMENT FOR DISPOSAL AND RECYCLING
Cells and batteries installed in Exempted Equipment from private households (SP 670 ADR only)

Practical example of exempted equipment from private households

139





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Home

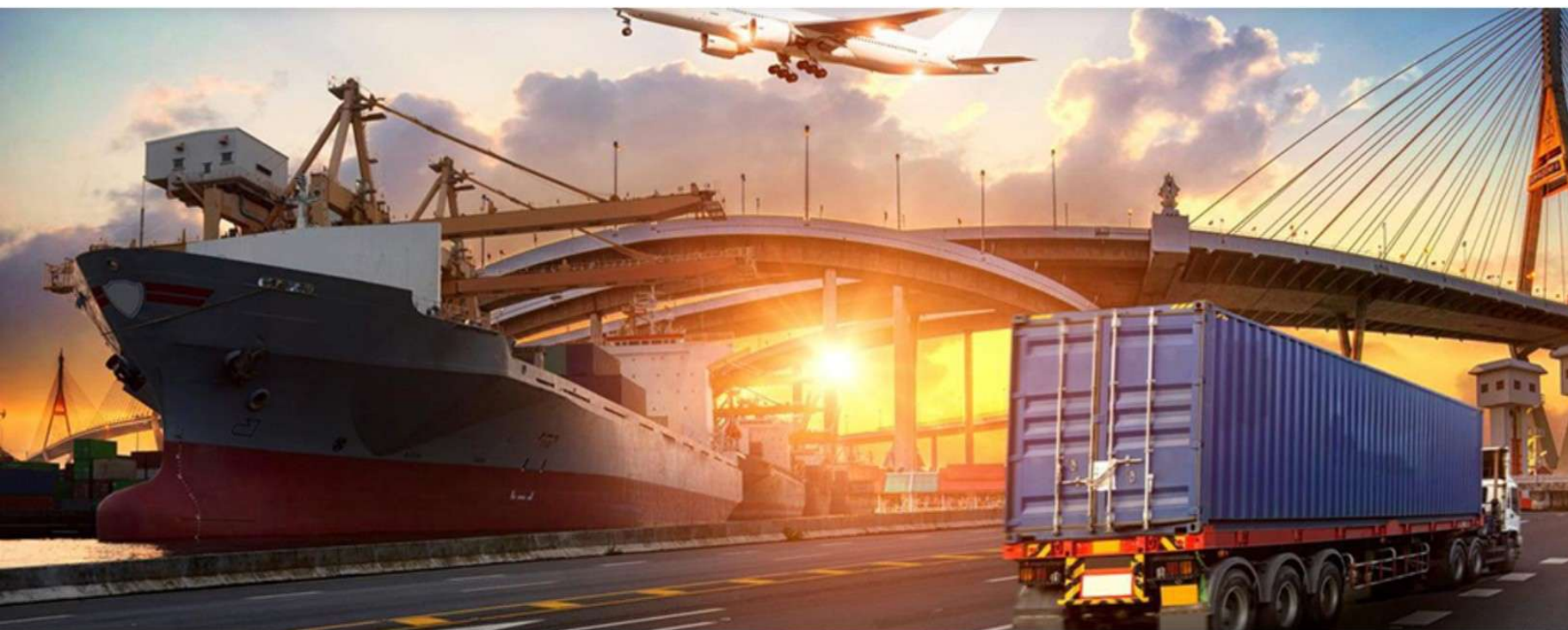
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BatteriesTransport is a joint industry initiative with the goal to facilitate the implementation of the legal requirements applicable to the transport of battery cells, batteries and equipment containing batteries. The transport of these products is regulated by UN, regional and national legislation - and applies to lithium-, lead, nickel- and sodium-based battery technologies likewise.



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Home

About us

Legal Requirements

eBooks

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FAQs





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Home

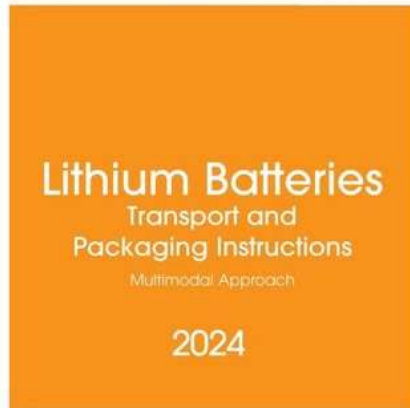
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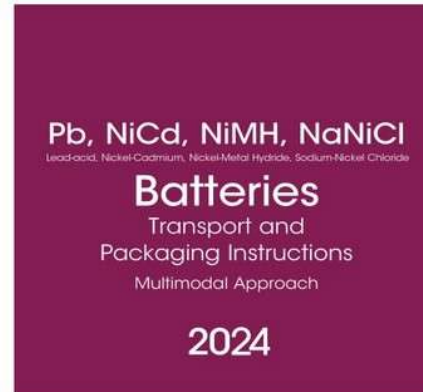
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Marco Ottaviani

HYPER



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Home

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Legal Requirements

eBooks

Content tree tool

FAQs



RECHARGE EPBA EUROBAT



Baterías de Litio

Instrucciones de Transporte y Embalaje

Enfoque multimodal

2024

Marco Ottaviani

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Baterías

Pb, NiCd, NiMH, NaNiCl

Instrucciones de Transporte y Embalaje

Enfoque multimodal

2024

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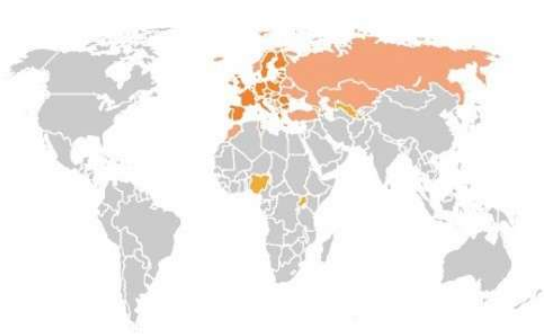
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eBooks

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FAQs



**INTERNATIONAL / EUROPE
(ADR Area)**

CANADA

USA

Guided decision tree:

What are you shipping ?

New cells and batteries ?

Waste cells and batteries ?

Damaged or defective cells and batteries ?

Small production run or prototypes ?

From www.batteriestransport.org

List of Summary Sheets

Lithium Metal Including Lithium Metal Alloy	Cells	As Batteries	UN 3090	2.1.1	LITHIUM METAL CELLS
				2.1.1.1A	Fully regulated cells
				2.1.1.1B	Small cells excepted
		Contained IN Equipment	UN 3091	2.1.2	LITHIUM METAL CELLS CONTAINED IN EQUIPMENT
				2.1.2.1	Fully regulated cells
				2.1.2.1I	Small cells excepted
	Packed WITH Equipment	UN 3091	2.1.3	LITHIUM METAL CELLS PACKED WITH EQUIPMENT	
			2.1.3.1	Fully regulated cells	
			2.1.3.1I	Small cells excepted	
Batteries	As Batteries	UN 3090	2.1.4	LITHIUM METAL BATTERIES	
			2.1.4.1A	Fully regulated batteries	
			2.1.4.1B	Small batteries excepted	
	Contained IN Equipment	UN 3091	2.1.5	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT	
			2.1.5.1	Fully regulated batteries	
			2.1.5.1I	Small batteries excepted	
	Packed WITH Equipment	UN 3091	2.1.6	LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT	
			2.1.6.1	Fully regulated batteries	
			2.1.6.1I	Small batteries excepted	
Lithium Ion Including Lithium Ion polymer	Cells	As Batteries	UN 3480	2.2.1	LITHIUM ION CELLS
				2.2.1.1A	Fully regulated cells
				2.2.1.1B	Small cells excepted
		Contained IN Equipment	UN 3481	2.2.2	LITHIUM ION CELLS CONTAINED IN EQUIPMENT
				2.2.2.1	Fully regulated cells
				2.2.2.1I	Small cells excepted
	Packed WITH Equipment	UN 3481	2.2.3	LITHIUM ION CELLS PACKED WITH EQUIPMENT	
			2.2.3.1	Fully regulated cells	
			2.2.3.1I	Small cells excepted	
Batteries	As Batteries	UN 3480	2.2.4	LITHIUM ION BATTERIES	
			2.2.4.1A	Fully regulated batteries	
			2.2.4.1B	Small batteries excepted	
	Contained IN Equipment	UN 3481	2.2.5	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	
			2.2.5.1	Fully regulated batteries	
			2.2.5.1I	Small batteries excepted	
	Packed WITH Equipment	UN 3481	2.2.6	LITHIUM ION BATTERIES PACKED WITH EQUIPMENT	
			2.2.6.1	Fully regulated batteries	
			2.2.6.1I	Small batteries excepted	
transported as new batteries	Lithium Metal Including Lithium Metal Alloy	UN 3090	2.3.1	WASTE LITHIUM METAL CELLS AND BATTERIES	
			2.3.1.1	Fully regulated_P903	
Lithium Ion Including Lithium Ion polymer	Lithium Ion	UN 3480	2.3.2	WASTE LITHIUM ION CELLS AND BATTERIES	
			2.3.2.1	Fully regulated_P903	
Mix or alone	Lithium metal, lithium ion, cells and batteries		2.3.3	CELLS AND BATTERIES FOR DISPOSAL OR RECYCLING	
			2.3.3.1	Fully regulated cells and batteries	
			2.3.3.2	Strong impact resistant out casing, mass of 12 kg or more	
			2.3.3.3	Small excepted cells and batteries	
	2.3.3.4	Mix of lithium cells and batteries (P909 + SP 636 ADR only)			
Equipment	Lithium metal, lithium ion, cells and batteries contained in equipment		2.3.4	CELLS AND BATTERIES CONTAINED IN EQUIPMENT FOR DISPOSAL OR RECYCLING	
			2.3.4.1	Cells and batteries contained in Equipment	
			2.3.4.2	Cells and batteries installed in Exempted Equipment from private households (SP 670 ADR only)	
			2.3.4.3	Cells and batteries contained in Equipment from private households, up to the intermediate processing facility (P909 + SP 670 ADR only)	
Damaged & Defective	Lithium metal, lithium ion, cells and batteries		2.4	CELLS AND BATTERIES DAMAGED & DEFECTIVE	
			2.4.1	Cells and batteries not critical	
			2.4.2	Cells and batteries critical	
Pre-production Prototypes & Production run ≤ 100 pieces	Lithium metal, lithium ion, cells and batteries		2.5	PRE-PRODUCTION PROTOTYPES & PRODUCTION RUNS ≤ 100 CELLS AND BATTERIES	



Dangerous Goods Transport Regulations

Shipping of batteries or WEEE containing batteries means:

- ← Identify transport requirements
- ← Comply with Special Provisions
- ← Comply with Packing Instructions
- ← Marks and labels on packages
- ← Transport document
- ← Transport compliance throughout the reverse logistics chain

Dangerous Goods Transport Regulations

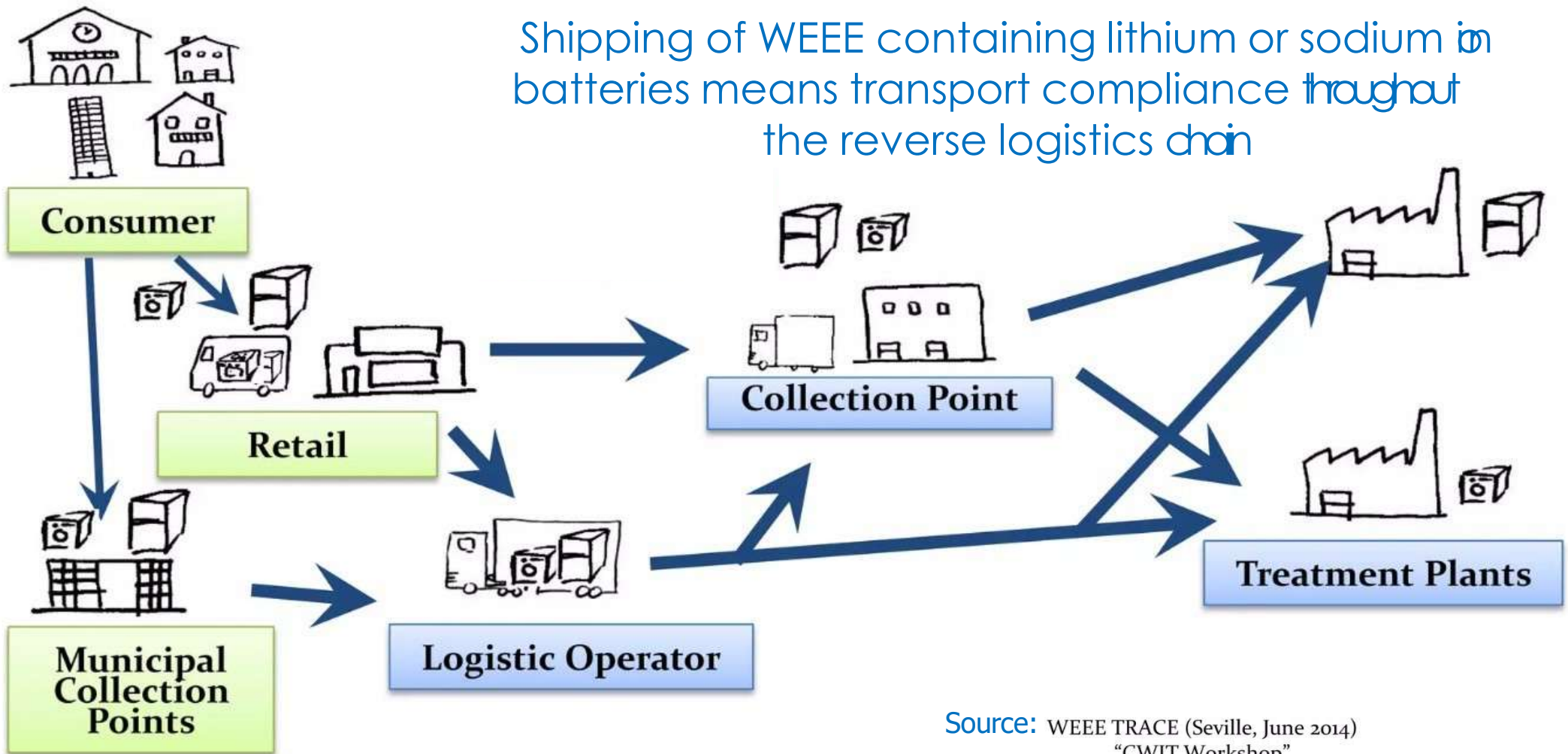
Shipping of batteries or WEEE containing batteries means to have:



- ← Trained personnel
- ← ADR vehicle driver
- ← Approved packagings
- ← Suitable packaging not approved
- ← DGSA

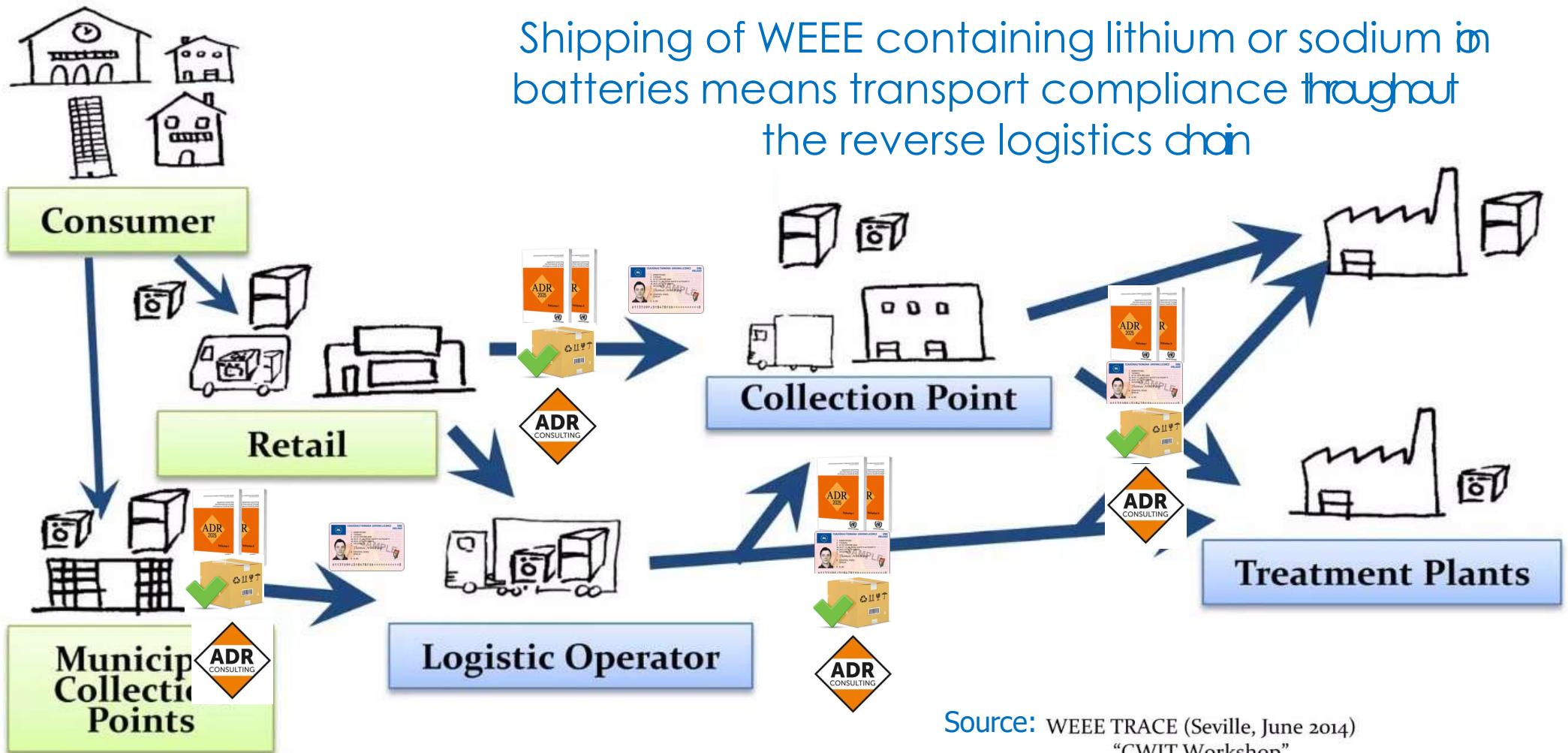
WEEE according SP 670

Shipping of WEEE containing lithium or sodium ion batteries means transport compliance throughout the reverse logistics chain



WEEE according SP 670

Shipping of WEEE containing lithium or sodium ion batteries means transport compliance throughout the reverse logistics chain



Source: WEEE TRACE (Seville, June 2014)
"CWIT Workshop"



Thank you for your attention

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