



Presentation To:  
**INTERNATIONAL AIRCRAFT SYSTEMS FIRE PROTECTION  
WORKING GROUP MEETING**

**Transport Canada  
Lithium Batteries Working Group**

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## Why are Lithium Batteries of Concern?

- Increased demand for more powerful batteries = increase in shipping
- Undeclared and counterfeit batteries becoming more common
- Lithium batteries contain flammable materials
- Battery failure can lead to: heat, fire, explosion, thermal runaway and failure of adjacent cells/batteries
- Lithium battery incidents have resulted from:
  - Poor manufacturing and design
  - Improper handling and abuse during transport and by users
  - Improper packaging and lack of external short circuit protection
  - Exposure to high-temperature environments and fire





# Transportation of Lithium Batteries - Background

## TC Lithium Batteries Working Group

### **Mandate:**

- The TC Lithium Batteries Working Group aims to consolidate Transport Canada's knowledge base on this topic and identify, discuss and analyse issues relating the transport and handling of lithium batteries.
- The Working Group may make recommendations to the TDG Director General on ways to improve the safety of lithium battery transport in Canada.

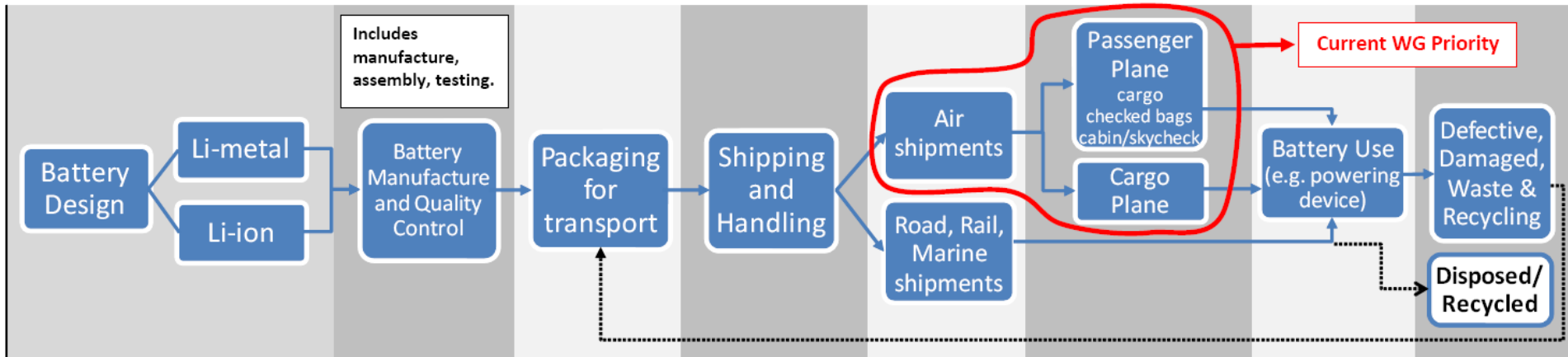


# Transportation of Lithium Batteries - Background

- Identified as an emerging issue (along with oil on rail) in 2012 and continues to be in 2014
- TC Lithium Batteries Working Group established in 2012
- Developed cost-effective awareness material in 2012 and 2013:
  - TDG website material to target shippers and general travelers
  - Sent material to Canada Post, Canada Border Services Agency, TDG General Policy Advisory Council members
  - One-pager distributed during inspection campaign
- 2013 TC National Lithium Battery Targeted Inspection Campaign – highlighted significant non-compliance and awareness issues that could increase the risk of a lithium battery incident in air transport
- An increase in consumer demand is driving the production and subsequent transport of more and more batteries. Higher volumes imply an increasing number of incidents



# Reduce the risk of a lithium battery incident during *transport and handling*



**GOAL:** Reduce the risk (probability x consequence) of a lithium battery incident in the transportation cycle.

**How significant is the risk?**  
**AND**  
**What can we do to reduce the risk?**



# Lithium Batteries Working Group Work Areas

*A multimodal WG, with members from TDG, Civil Aviation, Road Safety and Marine Safety.*

Our current work is focused on these areas:

- Compliance
- Awareness
- Regulations
- Research, Data Collection and Risk Analysis

# Lithium Batteries Working Group Work Areas

## Compliance

- Summer 2013 - **Assessed national compliance levels through inspection campaign** - Our goals were to:
  - ✓ Monitor compliance with applicable regulations
  - ✓ Raise awareness
  - ✓ Collect and analyze data to better understand the lithium battery industry
- 106 companies that transported lithium batteries were inspected as part of this campaign



# Lithium Batteries Working Group Work Areas

## Compliance

### Key findings from the inspection campaign:

- Awareness is very poor in general:
  - regardless of shipping mode and size of company
  - very low level of awareness of ICAO requirements by those shipping by air
  - very low awareness of the dangers associated with lithium batteries
- A surprising number of companies shipped damaged, defective and waste batteries by air in the past year
- 78% of companies who ship batteries by air were not declaring their shipments properly



# Lithium Batteries Working Group Work Areas

## Awareness

- Raise awareness that lithium batteries are dangerous goods and that they must be handled, shipped and transported safely
- Awareness material was created:
  - A two-pager document was distributed during the national inspection campaign
  - Lithium battery bulletin on the TDG website:  
<http://www.tc.gc.ca/eng/tdg/lithium-batteries-are-dangerous-goods-1162.html>
- Lithium battery awareness sessions were offered to inspectors who participated in the inspection campaign

# Lithium Batteries Working Group Work Areas

## Regulations

Align Canadian regulations on lithium batteries with current international regulations. It is very important for the TDG Regulations to be up-to-date to ensure enforceability and consistency

Planned Amendments to the **TDG Regulations**:

- UN 18 amendment of the TDG Regulations - Canada Gazette I publication September 2014
- Current projected timeline is for the amendment to Part 8, Reporting to be submitted for publication in Canada Gazette I in September-October 2014



# Lithium Batteries Working Group Work Areas

## Research, Data Collection and Risk Analysis

- **Ongoing project with National Research Council - assess the key risk factors in the air shipping and handling of lithium batteries**
- **TDG Research is planning a suite of multi-year projects starting in 2014-15 f/y to assess impact, risk, mitigation, that could include:**
  - Assessment of supply chain of lithium battery air shipments in Canada
  - A study of the environmental and abuse conditions during shipping and handling by air, and assessment of performance packaging and other mitigation measures for lithium batteries
  - A feasibility study of existing air cargo security screening technologies and applicability to lithium batteries (for detecting non-declared batteries)



# Lithium Batteries Working Group

The TC Lithium Batteries WG identified recommendations stemming from the 2013 National Lithium Battery Inspection Campaign in the following areas:

- **Awareness**
- **Inspector Education**
- **Regulations**
- **Compliance**
- **Research**
- **Data Collection and Risk Analysis**
- **Response**

The recommendations were presented to and approved by the Management Team. TC is working towards implementing them.



# Questions and Input?

## Transport Canada - Transport Dangerous Goods Directorate

Co-Chairs of the TC Lithium Batteries Working Group

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