

# OVERVIEW OF CANADA'S APPROACH TO MANAGING SPENT CONSUMER BATTERIES

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## Applying the Product Stewardship Framework Workshop: Household Batteries and Fluorescent Lamps

California Integrated Waste Management Board  
Del Norte Solid Waste Management Authority  
California Product Stewardship Council

Sacramento, California  
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Canada

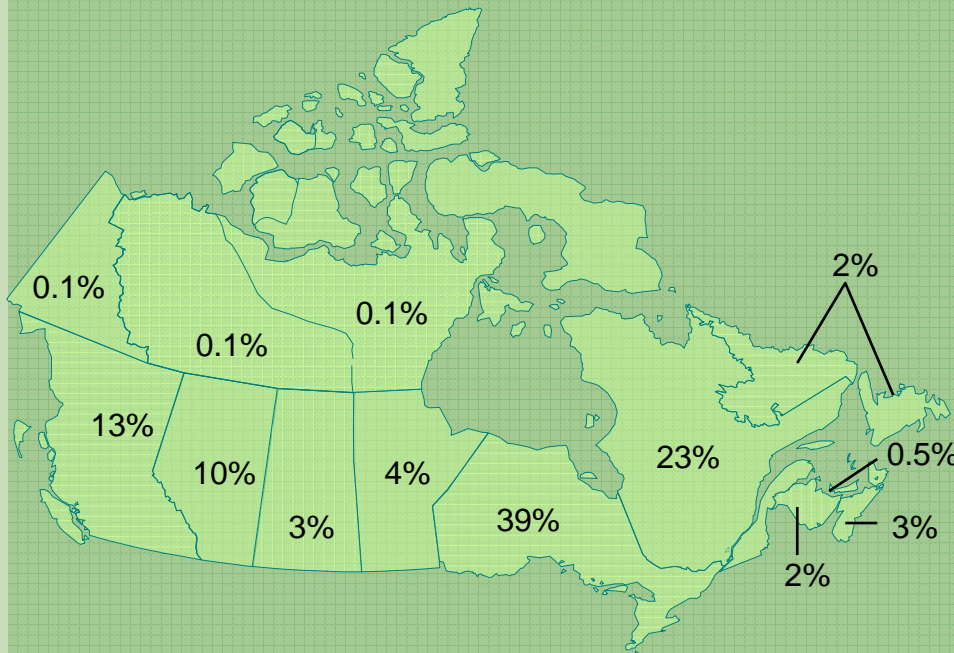
# OVERVIEW

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- EPR & waste management
- Policy & program drivers
- Federal laws
- Canadian Consumer Battery Baseline Study
- Provincial EPR laws
- Ontario's battery program
- What's next for Environment Canada?



# CANADA IS A BIG COUNTRY WITH A RELATIVELY SMALL POPULATION



Percent of Canadian Population by Province / Territory

- Land area = ~ 9 million km<sup>2</sup> (10 provinces, 3 territories)
- Population = ~ 33 million (almost the size of California)
- 85% of residents in 4 provinces
  - Ontario
  - Quebec
  - British Columbia
  - Alberta



# MANY HAZARDOUS & SPECIAL WASTES ARE TARGETED USING EXTENDED PRODUCER RESPONSIBILITY

- The distribution channels of many of these products can be complex



# MANAGING HAZARDOUS WASTES IS A SHARED RESPONSIBILITY IN CANADA

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- Federal authority ( Environment Canada )
  - *Canadian Environmental Protection Act 1999* instruments & other tools
  - *Export & Import of Hazardous Waste & Hazardous Recyclable Material Regulations*
  - *Interprovincial Movement of Hazardous Waste Regulations*
  - International agreements (e.g. UNEP, OECD, Canada/US)
- Provincial authority
  - Hazardous & non-hazardous waste movement, recycling & disposal within province
  - Extended Producer Responsibility (EPR) regulations for product-focused wastes
- Municipal authority
  - Local curb side recycling & waste collection
  - Operate public waste transfer & disposal facilities
  - Household hazardous waste collection programs

## KEY DRIVERS BEHIND POLICY & PROGRAM DEVELOPMENT FOR SPENT BATTERIES IN CANADA

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- Battery consumption is growing
- Batteries generally contain toxic and/or hazardous substances
  - lead, cadmium, nickel, mercury
  - electrolyte
- Some batteries pose a risk to the environment if improperly managed
- Many types of batteries are good candidates for resource recovery
- Majority of consumer batteries currently undergo final disposal
- Many provinces already mandate collection of e-waste
- Growing public interest in alternatives to disposal



# FEDERAL TRANSPORTATION LAWS APPLICABLE TO BATTERIES



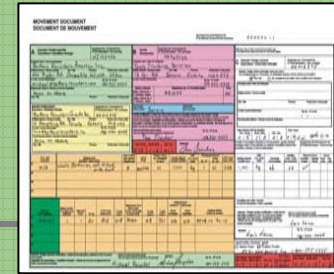
- Transport of batteries may be regulated under the *Transportation of Dangerous Goods Act* (Transport Canada)

## 1. *Transportation of Dangerous Goods Regulations*

- Protects public safety in the transportation of dangerous goods in Canada
  - Regulations apply to air, marine, rail & road transport
  - Requires shipping documents, carrier training, packaging & labelling requirements, adequate insurance coverage, approved emergency plans & release reporting
  - Permits of Equivalent Level of Safety are possible & have been issued
  - 9 classes of dangerous goods are regulated (modelled after United Nations classes)
  - Batteries generally fall under:
    - Class 8 (corrosive) e.g. all batteries except nickel cadmium
    - Class 9 (miscellaneous) e.g. lithium batteries
- **Some provinces also have laws for transporting dangerous goods**



# FEDERAL HAZARDOUS WASTE LAWS APPLICABLE TO SPENT BATTERIES



- Movements of spent batteries may be regulated under the *Canadian Environmental Protection Act* (Environment Canada)
  - 1. Export & Import of Hazardous Waste & Hazardous Recyclable Material Regulations (EIHWHRMR)**
    - Prior informed consent mechanism
    - Requires notice to Environment Canada, permits & movement documents
    - Use of authorized carriers & facilities with adequate insurance coverage
    - Variances can be issued using Permits of Equivalent Level of Environmental Safety
  - 2. Interprovincial Movement of Hazardous Waste Regulations (IMHWR)**
    - Currently being reviewed/updated to ensure consistencies with the EIHWHRMR
    - Used/waste batteries are controlled when hazardous
    - Permits of Equivalent Level of Environmental Safety are possible & have been issued
- Most provinces also have laws for hazardous waste



# SPENT BATTERIES SUBJECT TO FEDERAL HAZARDOUS WASTE LAWS (EIHWHRMR & IMHWR)

- Batteries included in Classes 2 to 6, 8 & 9 of the *Transportation of Dangerous Goods Regulations* (TDGR), including:

## Wet batteries

- UN 2794 – filled with acid (Class 8)
- UN 2795 – filled with alkali (Class 8)
- UN 2800 – non-spillable (Class 8)

## Dry batteries

- UN 3028 – containing potassium hydroxide solid (Class 8)

## Lithium batteries

- UN 3090 – lithium batteries (Class 9)

## Battery fluids

- UN 2796 – sulphuric acid up to 51% acid (Class 8)
- UN 2797 – alkali (Class 8)

## Other\*

- UN 3091 – lithium batteries contained in or packed in equipment (Class 9)
- UN 3171 – battery powered equipment or vehicles regulated by aircraft only (Class 9)
- UN 3292 – batteries or cells containing sodium (Class 4.3)

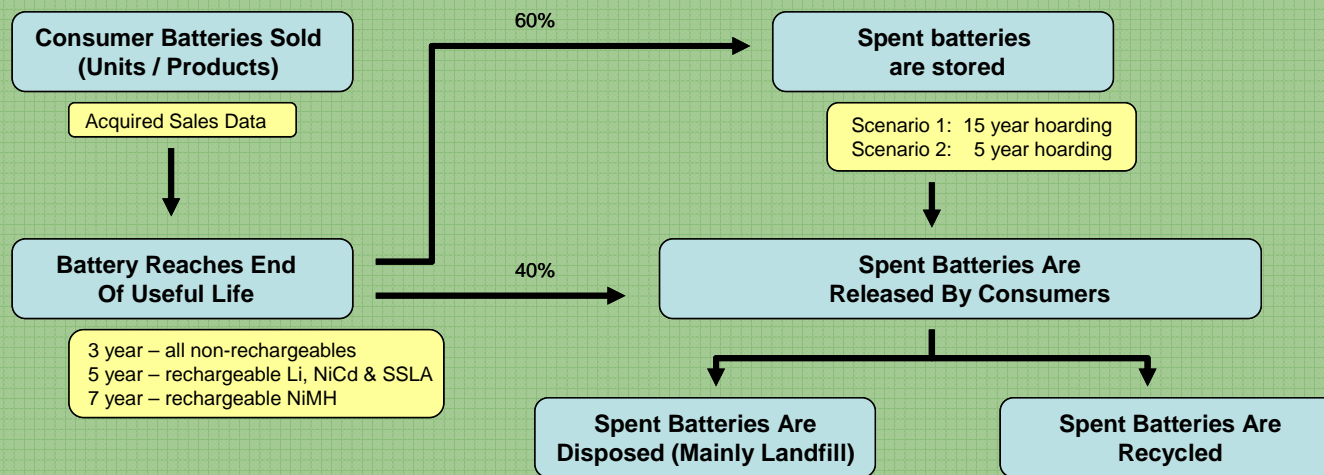
- Classification is ultimately the responsibility of exporters / consignors
- Often done in consultation with battery manufacturers & brand owners
- Contact Environment Canada & Transport Canada for additional details



# ENVIRONMENT CANADA'S CANADIAN CONSUMER BATTERY BASELINE STUDY

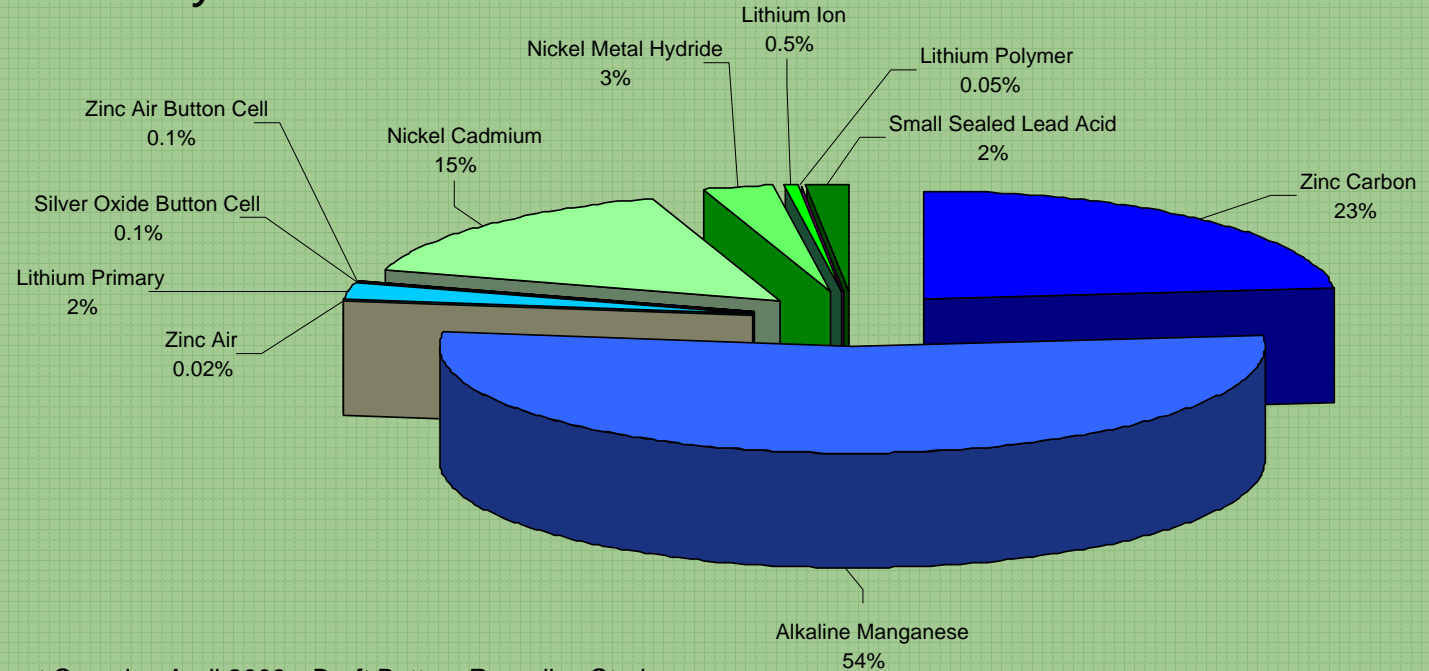
- Released by Environment Canada in 2007 (currently being updated)
- Estimates quantities of spent batteries from battery sales data

## CANADIAN CONSUMER BATTERY FLOW MODEL



# CONSUMER BATTERY SALES (BY WEIGHT)

- 2007 battery sales totalled 21,727 tonnes (to increase ~3% by 2015)
  - 80% primary batteries
  - 20% secondary batteries



Source: Environment Canada. April 2008. *Draft Battery Recycling Study*.

# ESTIMATED TOXIC SUBSTANCE CONTENT IN CONSUMER BATTERIES

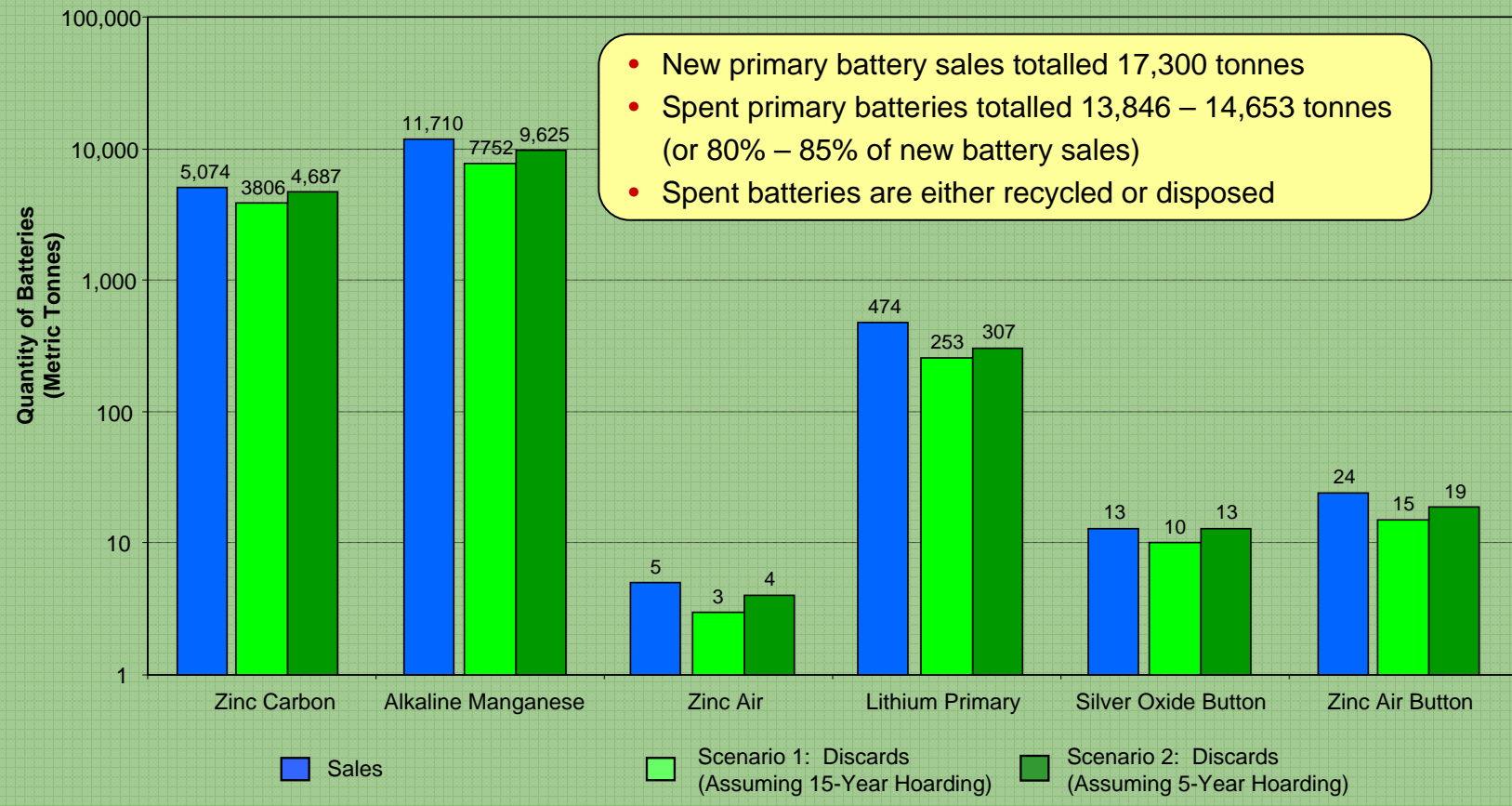
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- Batteries constitute less than 0.1% of disposed municipal solid waste
- Some consumer batteries contain toxic substances under CEPA 1999:
  - Nickel cadmium
  - Nickel metal hydride
  - Small sealed lead acid
  - Zinc air button
  - Silver oxide button
- Batteries sold in 2007 contained the following CEPA toxic substances:

• 254 tonnes	Pb	(~ 4% increase by 2015)
• 0.29 tonne	Hg	(~41% increase by 2015)
• 1,007 tonnes	Ni	(~28% decrease by 2015)
• 501 tonnes	Cd	(~56% decrease by 2015)
- Environment Canada's Chemical Management Plan
  - Categorized 23,000 substances in domestic commerce (completed Sep 2006)
  - Manganese, lithium & silver identified as low to medium priority substances



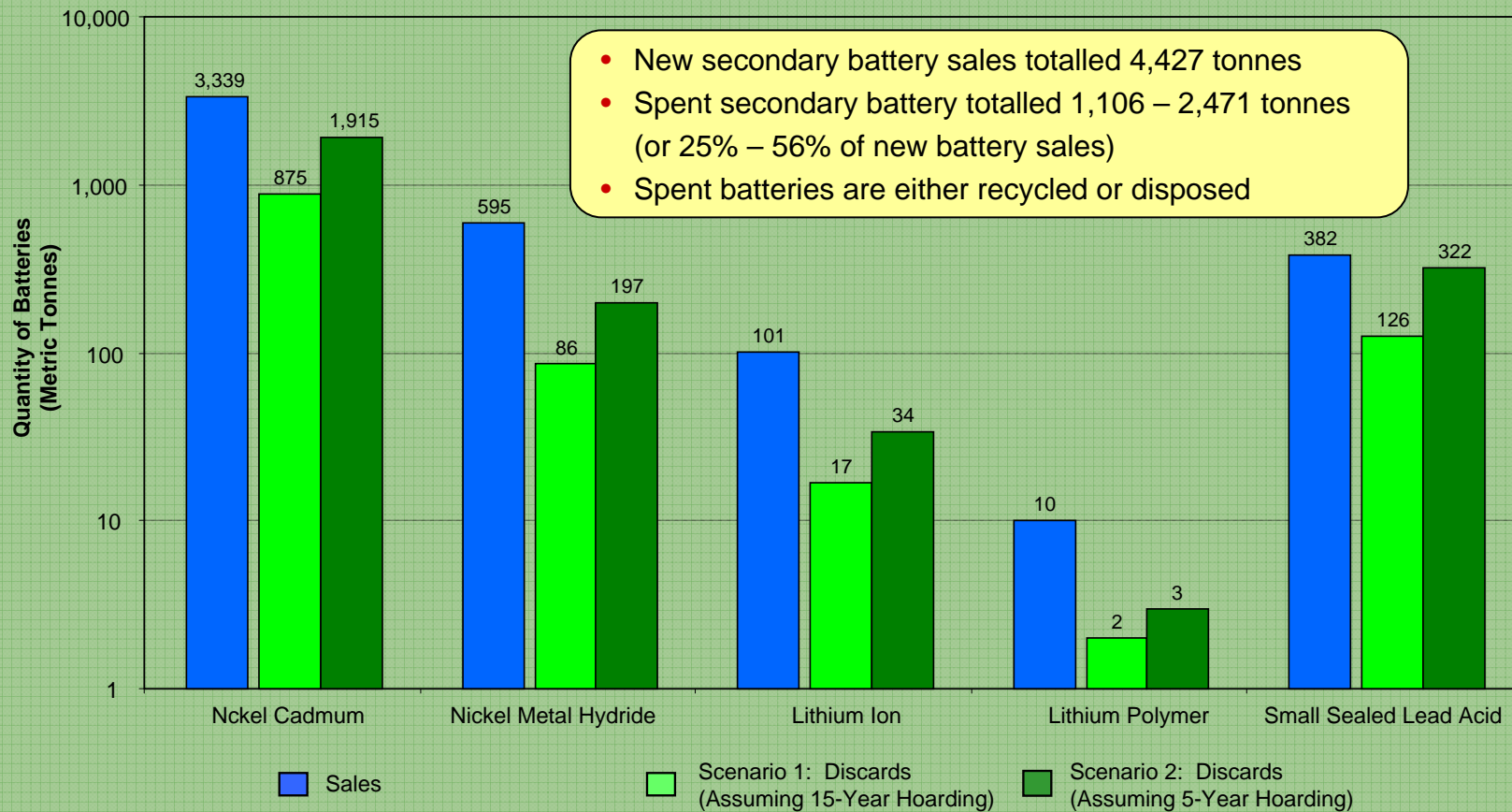
# SPENT NON-RECHARGEABLE CONSUMER BATTERIES GENERATED IN CANADA DURING 2007 (BY WEIGHT)



Source: Environment Canada. April 2008. *Draft Battery Recycling Study*.



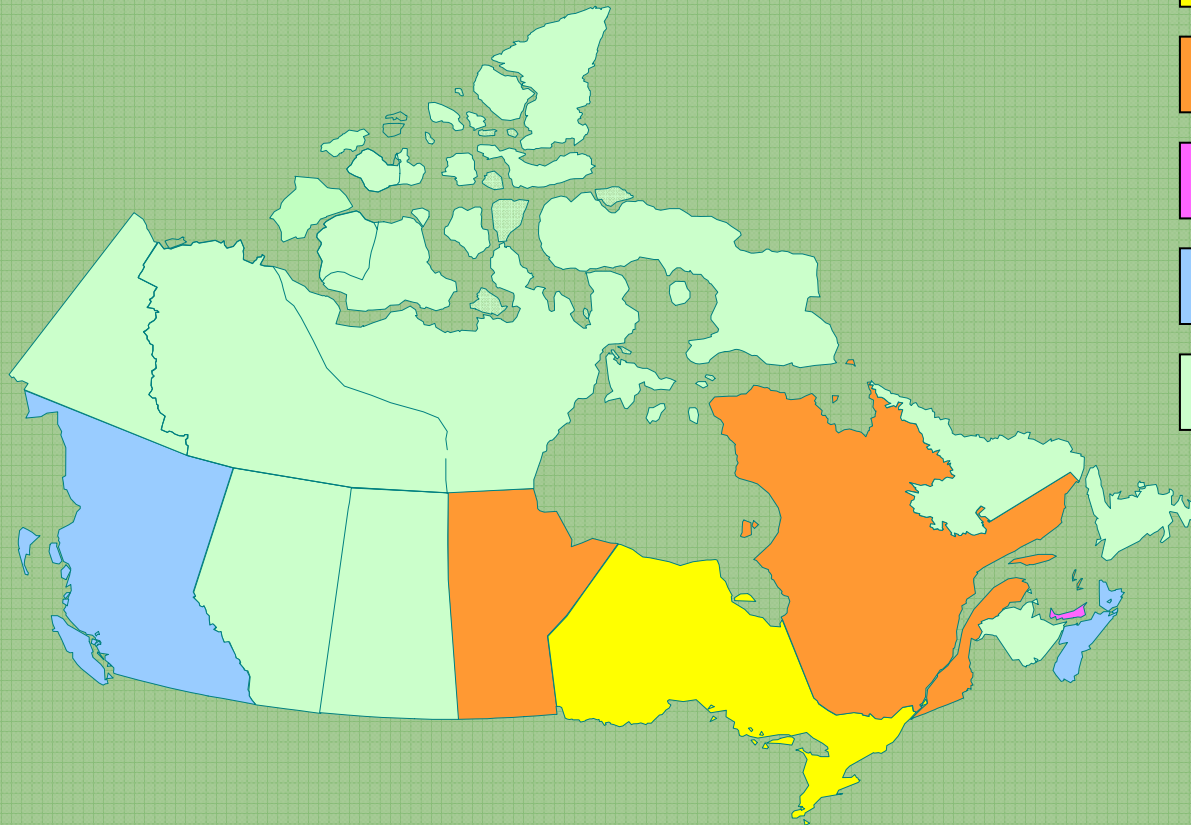
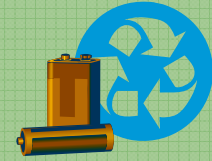
# SPENT RECHARGEABLE CONSUMER BATTERIES GENERATED IN CANADA DURING 2007 (BY WEIGHT)








Source: Environment Canada. April 2008. *Draft Battery Recycling Study*.



# PROVINCIAL PRODUCT STEWARDSHIP APPROACHES FOR CONSUMER BATTERIES



-  Regulations adopted with programs under development
-  Working on draft regulations
-  Voluntary program
-  Other types of engagement (Internal dialogue)
-  No activity at this time



# PROVINCIAL STEWARDSHIP APPROACHES FOR CONSUMER BATTERIES

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## BRITISH COLUMBIA:

- Possibly inclusion of consumer batteries under BC's *Recycling Regulation*
- Would impose obligations on producers
- Government administered program for SLAB (1991)

## MANITOBA:

- Draft *Electrical and Electronic Equipment Stewardship Regulation* (Jun 2007)
- Specifies producer responsibility for electronic products & batteries
- Targets all batteries except SLAB, zinc carbon & alkaline batteries

## PRINCE EDWARD ISLAND:

- Voluntary province-wide Re-Store Your Batteries since July 2005
- Retailer take-back funded by province & Island Waste Management Corp.
- *Lead Acid Battery Regulations* (1992) require retailers to collect SLAB



# PROVINCIAL STEWARDSHIP APPROACHES FOR CONSUMER BATTERIES (...continued)

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## QUEBEC:

- Minister announced producers will be responsible for batteries (Mar 2008)
- Draft Extended producer responsibility regulations anticipated Fall 2008

## ONTARIO:

- Batteries, among other products, designated as “municipal hazardous or special waste” under *Waste Diversion Act* (Dec 2006)
- Brand owner & first importer responsibility specified in Ministerial letter
- *Municipal Hazardous or Special Waste Program Plan* prepared (Nov 2007)
- Minister approved Plan in Feb 2008
- Staged implementation for battery collection programs
  - Phase 1: Single use dry cell batteries (program start date 1 July 2008)
  - Phase 2: Other batteries (program start date has not been announced)



## PRIMARY BATTERY COLLECTION IN ONTARIO: A CLOSER LOOK

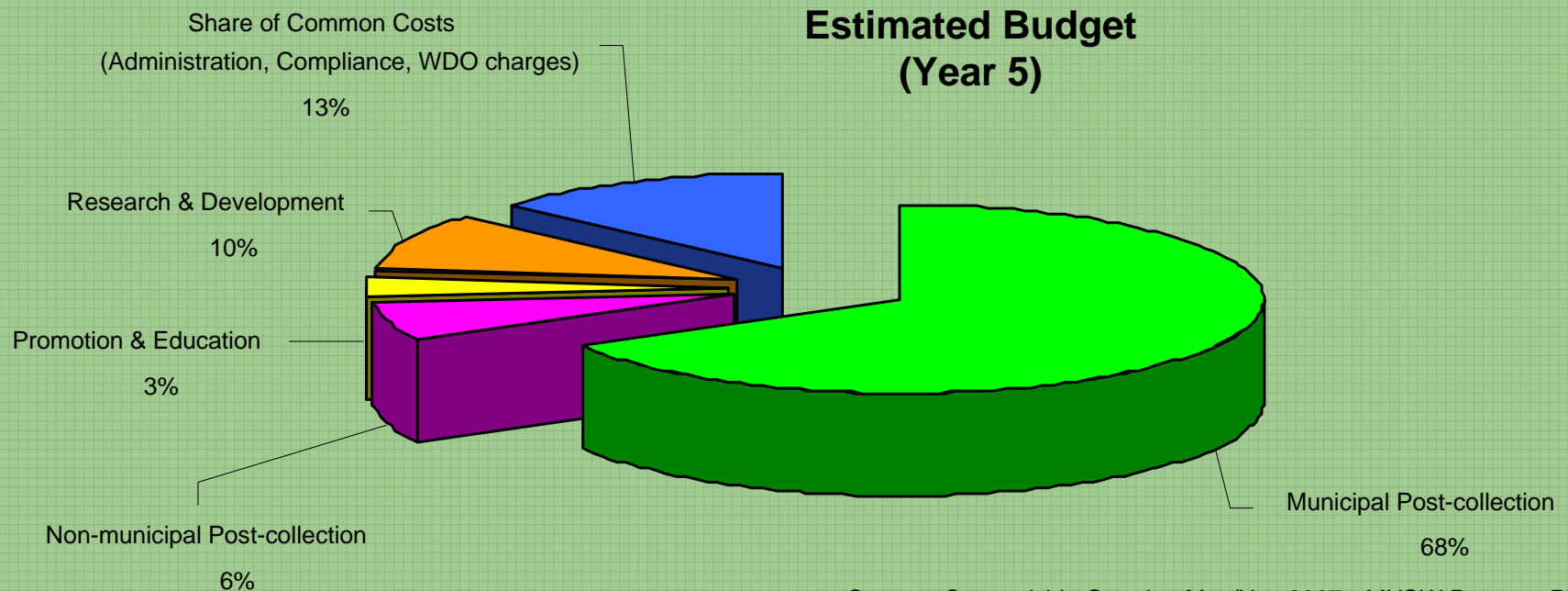


- Stewardship Ontario designated as the industry funding organization
- Program adopts a shared responsibility model
  - Municipalities to receive, package & manifest batteries for shipment
  - Stewards to transport, bulk, recycle, report & communicate
- Municipalities not required to provide collection services however
- Agreements being sought with municipalities (445 municipalities in total)
- Program Plan specifies rolling targets for Years 1 - 5 of the program:
  - Ontario primary battery sales accounted for ~ 5,040 tonnes in 2005
  - Collection rates will increase from 6 - 25% (i.e. 308 – 1,391 tonnes)
  - Diversion rates will increase from 1 - 13% (i.e. 62 – 695 tonnes)



# PRIMARY BATTERY COLLECTION IN ONTARIO: PROGRAM COSTING

- Annual program costs will range from \$630K (Year 1) to \$3M (Year 5)
  - Estimated fee of \$0.13 per kilogram (or \$0.003 per battery)
  - Fees will pay for program activities following initial battery collection

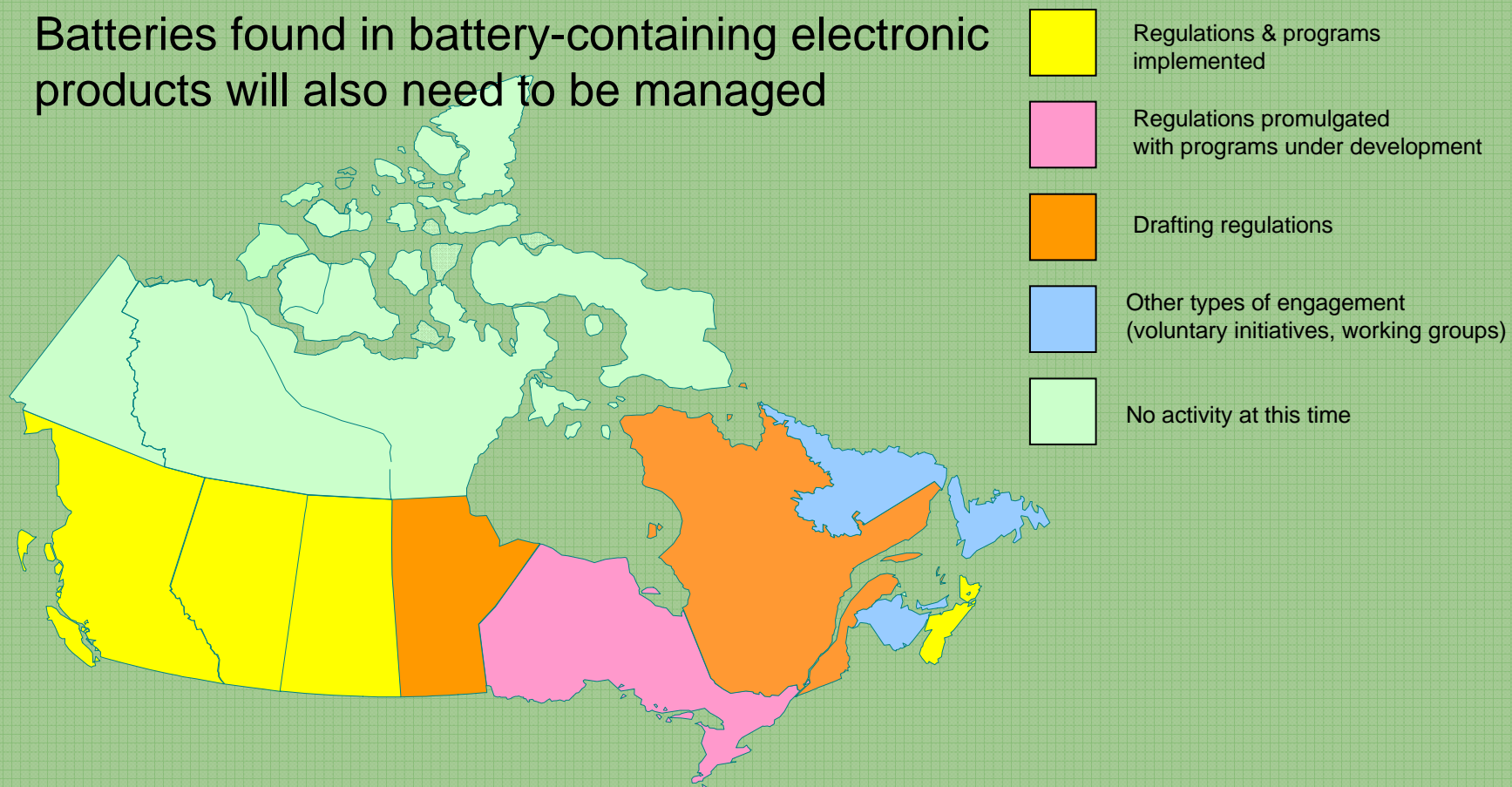


Source: Stewardship Ontario. May/Nov 2007. *MHSW Program Plan*.

# PROVINCIAL PRODUCT STEWARDSHIP APPROACHES FOR ELECTRONIC PRODUCTS



- Batteries found in battery-containing electronic products will also need to be managed



# VOLUNTARY INDUSTRY COLLECTION PROGRAM FOR RECHARGEABLE BATTERIES

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- Rechargeable Battery Recycling Corporation (established 1994)
  - Not-for-profit organization funded by battery manufacturers
- National program to collect rechargeable batteries in Canada since 1997
  - Collection via retailers, community centres, public agencies & businesses
  - RBRC provides courier pre-paid shipping boxes free of charge to collectors
    - 1997: nickel cadmium
    - 2001: nickel metal hydride, lithium ion & small sealed lead acid were added
    - 2004: cell phones were added
  - 2007 collection totaled 231 tonnes (~ 9 - 21% of spent secondary batteries)
- Program support by Canadian governments
  - Environment Canada, Natural Resources Canada & Transport Canada
  - All provincial and territorial environment ministries
  - Regulatory amendments & permits to facilitate collection & shipping

# ENVIRONMENT CANADA'S NEXT STEPS: RISK MANAGEMENT FOR SPENT BATTERIES

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- Assess need for federal intervention
  - Continue dialogue to support environmentally sound management & meaningful approaches to reporting battery collection & recycling
  - Monitor existing & proposed provincial risk management measures
  - Explore federal mechanisms to complement existing activity as appropriate
- Mercury-containing Products Strategy (released Dec 2006)
  - Regulation to restrict Hg in designated products, including batteries
- Chemical Management Plan
  - Screening assessments of priority substances will be required
  - Risk management strategies for electronics & other wastes will be prepared as appropriate

THANK YOU

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