
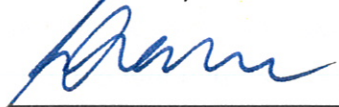


Complete Program Title: Battery Recycling and Disposal Program	Risk Management Manual (RMM) Number: 506
Approved by:  Vice-President, Administration  President and Vice-Chancellor	Date of Most Recent Approval: February 2014
Date of Original Approval: December 2008	Supersedes/Amends Program dated: January 2010
Responsible Executive: Vice-President, Administration	Enquiries: Environmental and Occupational Health Support Services (EOHSS) eohts@mcmaster.ca
DISCLAIMER: <i>If there is a discrepancy between this electronic program and the written copy held by the program owner, the written copy prevails.</i>	

1 PURPOSE

- 1.1 To provide a system for environmentally responsible recycling and disposal of used batteries that protects individuals, the natural environment and McMaster University property.
- 1.2 To ensure compliance with environment-protection legislation and best practices which have the potential to impact the environment. This program is intended for used batteries generated from the University only. Individuals who have batteries to dispose of from their home must continue to follow household hazardous waste procedures.

2 SCOPE

- 2.1 All faculty, staff, students, volunteers and contractors in activities at any location approved by McMaster University.

3 RELATED DOCUMENTS

- 3.1 Environmental Protection Act of Ontario R.S.O. 1990
- 3.2 RMM #100 McMaster University Workplace and Environmental Health and Safety Policy

- 3.3 RMM #103 Environmental Protection Act of Ontario & Other Federal, Provincial, and Municipal Environmental Statutes
- 3.4 RMM #502 Hazardous Waste Management Program
- 3.5 RMM #505 Transportation of Dangerous Goods Program

4 DEFINITIONS

- 4.1 **Supervisor:** Person who has charge of a workplace or authority over a worker(s).
- 4.2 **Worker:** Person who performs work or supplies services for monetary compensation.
- 4.3 **Battery:** an electrochemical cell (or enclosed and protected material) that can be charged electrically to provide a static potential for power or released electrical charge when needed.
- 4.4 **Alkaline Battery:** a type of power cell dependent upon the reaction between zinc and manganese oxide. The battery gets its name because it has an alkaline electrolyte of potassium hydroxide, as opposed to the acidic electrolyte of the zinc-carbon batteries which are offered in the same nominal voltages and physical size.
- 4.5 **Lithium-Ion Battery:** a type of rechargeable battery in which a lithium ion moves between the anode and cathode. The lithium ion moves from the anode to the cathode during discharge and from the cathode to the anode when charging. Most commonly used in consumer electronics.
- 4.6 **Ensure:** take every reasonable precaution to achieve the stated objective.
- 4.7 **Nickel-Cadmium Battery:** a type of rechargeable battery using nickel oxide hydroxide and metallic cadmium as electrodes.
- 4.8 **Acronyms:**
 - CJHSC** - Central Joint Health and Safety Committee
 - EOHSS** - Environmental and Occupational Health Support Services
 - EPA** - Environmental Protection Act
 - FHSc safety office** - Faculty of Health Science Safety Office
 - OPIRG** - Ontario Public Interest Research Group
 - RMM** – Risk Management Manual
 - RMSG** - Risk Management Support Group
- 4.9 **Buildings with Battery Disposal Bins:**
 - **A.N. Bourns Science Building Stores** – Room B166
 - **Campus Services Building** – Floor One
 - **Commons Building** – Main Entrance/Service Desk, Room 129
 - **David Braley Centre** – Main Entrance/Joan Buddle Service Desk
 - **Mary Keyes Residence** – Main Entrance/Service Desk, Room 126

- **McMaster Automotive Research Centre (MARC)**
- **McMaster Innovation Park – McMaster Industry Liaison Office (MILO)**
- **Health Sciences Centre (HSC)** – HSC Scientific Store, Room 1G1
- **McMaster University Student Centre** – OPIRG Office, Room 229
- **Campus Services Building (CSB)** – 1st floor

5 RESPONSIBILITIES

5.1 Role of Senior Managers (Deans / Directors / Chair / Managers):

Senior Managers shall:

- provide the resources and support necessary to implement and maintain the battery recycling and disposal program within their area of responsibility

5.2 Role of Supervisors (Administrative and Academic)

The responsible supervisors shall:

- ensure that the practices and procedures for handling the recycling and disposing of used batteries are followed by all individuals supervised;
- ensure that all individuals supervised are trained in environmental best practices related to the handling, recycling and disposal of used batteries;
- ensure that all individuals supervised are trained to respond effectively to environmental occurrences and required reporting procedures; and
- inform EOHSS/FHSc safety office immediately upon receiving notice of any significant environmental occurrence.

5.3 Role of Individuals (Workers, Students, Volunteers, Contractors)

Individuals shall:

- follow all prescribed practices and procedures related to the recycling and disposal of used batteries.

5.4 Role of Environmental and Occupational Health Support Services:

EOHSS shall:

- designate and distribute Battery Recycling and Disposal Pails to the proposed buildings on campus;
- manage the pickup and removal of all used batteries from designated locations on campus;
- communicate with regulators on environmental issues; and

- provide direction and training as required to facilitate best practices in the handling, storage, recycling and disposal of used batteries generated on campus.

5.5 **Role of Faculty of Health Science Safety Office:**

FHSc Safety Office shall:

- provide direction and training as required to facilitate best practices in the handling, storage, recycling and disposal of used batteries generated at MUMC.

5.6 **Role of Environmental and Occupational Health Services (EOHSS) and Faculty of Health Sciences Safety Office (FHSc):**

The EOHSS and/or FHSc safety office shall:

- monitor the effectiveness of the Battery Recycling and Disposal Program;
- provide input based on changing legislation and/or best practices for program updates;
- review all hazardous waste best practices and handling procedures regularly for the legislative compliance and safety-related processes.

5.7 **Role of Central Joint Health and Safety Committee:**

The CJHSC shall:

- review the Battery Recycling and Disposal Program on a scheduled basis; and
- document this review.

6 **PROCEDURAL GUIDELINES**

6.1 There is the potential for hydrogen build up when used batteries are packaged together. Used batteries must be separated into the following categories: (see Appendix A).

- Alkaline Batteries
- Lithium-Ion Batteries
- Nickel-Cadmium Batteries

6.2 Recycling and disposal pails/bins will be identified with labels and pictures for sorting of used batteries

- 6.3 Used batteries must not be placed in the same pail/bin without sorting them first. Using the instructions and visual picture guide, individual batteries are to be placed into the appropriate recycling/disposal pail/bin
- 6.4 If a used battery does not meet the above sorting criteria, EOHSS or FHSc safety office should be contacted to make arrangements for proper recycling and disposal

7 RECORDS

- 7.1 The responsibility for maintaining records of used battery recycling and disposal shipments is assigned to EOHSS to for campus buildings excluding the McMaster University Medical Centre

APPENDIX A

Sample Types of Batteries:

The following are the 3 types of used batteries that can be recycled at each of the designated areas:

Alkaline Batteries:

- Flashlight Batteries
- Lantern Batteries
- Batteries for commonly used products



Lithium Ion Batteries:

- Li-ion Batteries
- Cell Phone Batteries
- Laptop Batteries



Nickel-Cadmium Batteries:

- Ni-Cad Batteries
- Battery Packs
- Rechargeable Batteries

