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|  <p>McMaster University Risk Management Manual</p> | <p>RMM# 506 Title: Battery Recycling and Disposal Program</p> | <p>Date: Oct 2008 Page: 1 of 5</p> |
| <p>Submitted: _____ Risk Management Support Group</p> | <p>Approved: _____ Vice President, Administration</p> | <p>Authorized: _____ President and Vice-Chancellor</p> |

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 in all McMaster University activities 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 (See EOHSS website)
- 3.2 Environmental Protection Act of Ontario and other Federal, Provincial, and Municipal Environmental Statutes RMM #103
- 3.3 McMaster University Workplace and Environmental Health and Safety Policy, RMM#100
- 3.4 Hazardous Waste Management Program RMM #502
- 3.5 Transportation of Dangerous Goods Program RMM #505

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.

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4.6 **Nickel-Cadmium Battery:** a type of rechargeable battery using nickel oxide hydroxide and metallic cadmium as electrodes.

4.7 **Acronyms:**

EOHSS-Environmental and Occupational Health Support Services

FHSc Safety Office- Faculty of Health Science Safety Office

OPIRG-Ontario Public Interest Research Group

EPA-Environmental Protection Act

CJHSC-Central Joint Health and Safety Committee

RMSG-Risk Management Support Group (Health Physics, Environmental and Occupational Health Support Services, Faculty of Health Sciences Safety Office, Security and Parking Services, Employee Health Services and Director of Workplace Health and Benefits)

4.8 **Buildings with Battery Disposal Bins:**

- **A.N. Bourns Science Building Stores**-Room B166
- **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 University Student Centre**-OPIRG Office, Room 229
- **McMaster University Medical Centre (MUMC)**-Room 4N43

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;

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- ensure that all individuals supervised are trained to respond effectively to environmental occurrences and required reporting procedures;
- inform the EOHSS Office or the appropriate RMSG 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;
- 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 Ontario Public Interest Group:**

OPIRG shall:

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

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5.7 **Role of Risk Management Support Group:**

The RMSG 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 annually for the legislative compliance and safety-related processes and;
- document this review

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

The CJHSC Shall:

- review the Battery Recycling and Disposal Program on a scheduled basis;
- 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 where applicable, 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 the appropriate office within the RMSG i.e. EOHSS and FHSc Safety Office retain records of all used battery recycling and disposal shipments

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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

