Guideline for the Management of Waste Batteries

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1 Introduction

This guideline provides general information on the proper management of waste batteries. Waste batteries are a contaminant under the *Environmental Protection Act* (EPA) of the NWT and must be managed as a hazardous waste.

Storage batteries are a source of direct electric current produced by reaction of the chemicals in the battery. In rechargeable batteries, the chemical reaction is reversible and therefore they can be recharged many times. Eventually however, even the best rechargeable batteries reach the end of their useful life and become wastes. All batteries contain a corrosive liquid or semi-liquid electrolyte that is either a strong acid or a strong base. In addition, batteries contain metals, such as cadmium, lead, lithium and potassium, which generally are toxic and persist in the environment.

This guideline addresses lead acid batteries and rechargeable batteries. Lead batteries (i.e. car batteries) contain sulphuric acid and lead. Rechargeable batteries (i.e. industrial forklift, radio and transmitter batteries) usually contain either potassium hydroxide or nickel cadmium.

Batteries in domestic products like radios and flash lights, (examples: AAA to D cells, 6 or 9 volt consumer batteries) are not included in this guideline. Button batteries however, may contain mercury, cadmium and silver and should be dropped off at "Household Hazardous Waste Days" locations operated by the municipality.

This guideline is specific to the management of waste batteries and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the NWT (referred to as the General Guideline). Section 2.2 of the EPA gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer these guidelines.

1.1 Definitions

Generator — The owner or person in charge, management or control of a hazardous waste at the time it is generated or a facility that generates hazardous waste.

Transport authority — The regulations controlling the management of hazardous waste under that mode of transport. These include:

Road and rail - *Transportation of Dangerous Goods Act* (TDGA) *and Regulations* (TDGR)

Air - *International Civil Aviation Organization Technical Instructions* (ICAO)

Marine - *International Maritime Dangerous Goods Code* (IMDG).

Waste batteries A general term used to describe spent electrical storage batteries which are no longer useful for their intended purpose and are intended for storage, recycling, treatment or disposal. Examples of waste battery types include: lead acid; potassium hydroxide; nickel cadmium. For the purpose of this guideline, waste batteries do not include dry cell size AAA to D, 6 or 9 volt domestic batteries.

1.2 Characteristics

Hazards from waste batteries are associated with improper handling and disposal. Improper handling can release corrosive fluids that can cause chemical burns and damage to a wide variety of materials. Metals in batteries, including lead, mercury and cadmium, are toxic and bioaccumulate in plants and animals. They also persist in the environment.

1.3 Potential Effects

Improper handling of waste batteries can result in the spillage of corrosive materials. The corrosive materials contain dissolved metals that are toxic to plants and animals. Improper disposal of batteries in landfill sites may result in the release of corrosive fluids and dissolved metals into groundwater and the environment.

2 Roles and Responsibilities

2.1 Environmental Protection Service

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. EPS programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the EPA and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

2.2 Generators

The responsibility for proper waste management rests with the generator and should be considered as part of the cost of doing business.

Every person who generates waste batteries is responsible for the proper management of these materials. Waste batteries must be safely handled, packaged, stored, transported, treated and/or disposed in accordance with this guideline and all applicable Acts and regulations.

3 Waste Management

Minimizing or avoiding the creation of pollutants and wastes can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.

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3.1 Pollution Prevention

Pollution prevention methods reduce or eliminate the generation of waste products. Pollution control options treat waste after it has been created. Pollution prevention strategies for batteries include the following:

Reduce

- Maintain and protect batteries to prevent damage and charge loss.
- Test batteries prior to disposal to confirm the battery is spent.
- Replace non-rechargeable batteries with rechargeable batteries where possible.

Recycling

- Service batteries to extend the life.
- Send spent batteries to recyclers. (Recyclers reduce a battery into its component parts and produce new batteries or manufacture other products. The component parts include; metal, plastics and liquid components of the battery.)
- Make an agreement with your supplier/distributor of batteries to return the waste batteries.

3.2 Storage

Battery storage is not a long term solution.

Store waste batteries according to the following:

- Use containers that are sound, sealable and not damaged or leaking.
- Bulk into good quality 16 gauge or lower gauge metal or plastic 205 Litre drums, or other form of containment, as appropriate.
- Label containers according to the requirements of the Work Site Hazardous Materials Information System (WHMIS) of the *Safety Act* or the relevant Transport Authority, if transport is planned.
- Keep the containers sealed or closed at all times.
- Protect from the weather and physical damage.
- Use wooden pallets to keep the containers and batteries off the ground during storage and transport.
- Storage should be in a secure area with controlled access.
- Train personnel in the safe use, storage and shipping procedures for waste batteries. Only trained persons should have access to the storage area.

Temporary storage of waste batteries is only acceptable as an interim measure to permit time for the collection of sufficient volumes for cost effective transport to a recycler or disposal facility. Storage of batteries in quantities greater than 1000 kilograms for a period greater than

180 days requires registration of the site as an hazardous waste storage facility. Consult the General Guideline or contact EPS for application procedures.

3.3 Transportation

The transportation of waste batteries to a recycling, treatment, disposal or management facility requires the proper classification packaging, labeling and manifests for the specific transport authority (air, marine, rail, road). Specific requirements for waste generators and carriers are detailed in the General Guideline.

The following are examples of battery packaging requirements for road transport:

Singles - Secure batteries upright in a leak proof plastic container or a polyethylene bag and tie securely.

By the Drum - Stack batteries upright inside the drum and separate by a layer of adsorbent material, cardboard or plywood. The drums can be metal or plastic but must be maintained in an upright position and sealed during transport.

By the Pallet - Waste batteries should be fastened to the pallet by nylon straps or other secure means. Place batteries on a leak proof polyethylene containment liner which is folded over the batteries to form a sealed system. Do not stack batteries more than two high and separate the two layers with cardboard or plywood.

For road transportation purposes, waste batteries can be classified in the following ways, depending on the type of battery.

Shipping Name: **Battery, dry, containing potassium hydroxide solid**
Classification 8
P.I.N.: UN3028
Packing Group III, or

Shipping Name: **Battery, wet, filled with acid**
Classification 8
P.I.N.: UN2794
Packing Group III, or

Shipping Name: **Battery, wet, filled with alkali**
Classification 8
P.I.N.: UN2795
Packing Group III, or

Shipping Name: **Battery, wet, non-spillable**
Classification 8
P.I.N.: UN2800
Packing Group III.

Further consultation with the transport authority is recommended.

Generator, Carrier and Receiver numbers, waste manifests and registered hazardous waste carrier lists are available from the Environmental Protection Service.

3.4 Disposal

The long term goal for the management of waste batteries is 100% recycling.

Bulk batteries for transportation and ship to a registered recycling or disposal facility. The battery industry is currently expanding its ' product stewardship program and are accepting waste batteries through distributors for recycling. Contacts for recycling or disposal companies are available by contacting the waste management associations listed in Appendix II of the General Guideline.

Consideration will be given to proposals for alternate disposal methods that provide a level of environmental protection equivalent to complying with this guideline. EPS may approve the method, subject to conditions.

4 Conclusions

This guideline presents a brief introduction into the management of waste batteries. It is intended as a source of basic information and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the Northwest Territories.

For more information contact:

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2) Motor Vehicles
Department of Transportation
76 Capital Drive, Suite 201
Hay River NT X0E 1G2
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3) Prevention Services Division
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