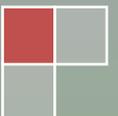


Environmental Guideline on Assembly of Batteries



Department of Environment

The purpose of this environmental guideline is to provide guidance to prospective developers to operate their enterprise involved in the assembly of batteries on the basis of self-adherence and to assist Local Authorities at the Building and Land Use Permit stage.



1.0 Background

Workshops entailing repair or charging of batteries are not categorized as being part of battery assembly. Assembly of batteries may be done using either a manual or automated method, although the associated environmental impacts of both are similar. The main processes involved in the assembly of individual batteries and battery packs are as follows:

- Assembling the electrodes and insulating materials;
- Installing the electrodes into the casing;
- Pasting and curing;
- Filling of acid;
- Sealing of casing;
- Connecting the batteries to form battery pack;
- Sealing the battery pack into the casing; and
- Charging, discharging and testing.

Major issues of environmental concern relate to:

- Site selection
- Wastewater and acid spillage
- Solid wastes
- Noise
- Airborne issues (e.g. lead fumes emitted during welding of lead electrodes and lead dust)
- Fire / Explosion Risk

Others:

- Health impacts
- Occupational health and safety

2.0 Objectives of the guideline

This guideline is meant to ensure that prospective developers:

- adopt appropriate mitigating measures to safeguard the environment.
- comply with provisions of relevant laws/ regulations/standards.
- adopt eco-friendly practices to optimize use of resources.

3.0 Applicable Legislation

Assembly of batteries does not warrant a Preliminary Environmental Report (PER) Approval or an Environmental Impact Assessment (EIA) Licence. It requires, amongst others, a Building and Land Use Permit under the Local Government Act 2011. Assembly of batteries has to be carried out in accordance with the provisions under the Planning Policy Guidance and Outline Planning Scheme.

Note:-

1. *The development must comply with relevant provisions of the Local Government Act 2011, the Town and Country Planning Act 1954, the Building Control Act 2012, the Planning and Development Act 2004, Mauritius Fire and Rescue Service Act 2013, as subsequently amended and all applicable guidelines and regulations.*
2. *According to Part B of the Fifth Schedule of the Environment Protection Act (EPA), item 26 "Manufacture of batteries" warrants an Environmental Impact Assessment (EIA) Licence.*
3. *Workshops entailing, but not limited to repair or charging of batteries, are not concerned by this guideline.*

4.0 Location/ Siting

- (i) Enterprises involved in the assembly of batteries should not be located within residential areas as defined in the Outline Planning Scheme but preferably be within industrial areas.
- (ii) The existing development context of the site/land should be compatible with the activity.

- (iii) The site should not be located within any Environmentally Sensitive Area (ESA) and its prescribed buffer zone as per ESA Study 2009 such as wetland, steep slope and in areas that are likely to be affected by hazards such as inland flooding, landslide and storm surges, amongst others.
- (iv) On site wastewater disposal facility such as septic tanks and absorption pits/leaching fields shall be located not less than 30 m from any water course as per Rivers and Canals Act 1863.
- (v) Existing natural drains and watercourses or in the vicinity of the site shall not be tampered with.

5.0 Mitigation of Environmental Impacts

5.1 Wastewater and acid spillage

Wastewater arises from washing of premises and domestic purposes. Spillage of acid during storage and handling of lead, acid and battery cases may result in contaminated wastewater, which if discharged without treatment will potentially contaminate watercourses.

Mitigating measures include:

- Provision of appropriate wastewater treatment and disposal to the satisfaction of the Wastewater Management Authority (WMA).

Note:- *As per the Wastewater (Standards for Discharge of Industrial Effluent into a Wastewater System) Regulations 2004, in case an enterprise is connected to the public sewer system, the enterprise has to make an application to the WMA for obtaining an Industrial Discharge Permit.*

- Installation of grease traps or oil water separators for removal of floatable solids from water.
Note:- *Maintenance of the grease trap or oil water separator is to be carried out by the owner / promoter.*
- A bunded wall/structure to contain overflows shall be provided around the acid storage area to control any accidental spillage or leakage. The structure should be resistant to sulphuric acid (e.g. acid resistant metal such as SS316).
- A contingency plan should be developed for any accidental chemical spillage.

5.2 Solid waste management

The main sources of solid wastes are:

- Industrial wastes such as damaged or used batteries and other hazardous wastes such as acid containers
- Domestic wastes

Mitigating measures include:

- All hazardous wastes shall be collected and properly disposed of as per the Environment Protection (Standards for Hazardous Wastes) Regulation 2001.
- No person shall use, store, transport or otherwise deal with a hazardous waste unless that hazardous waste is kept in a container or package -
 - (a) designed and constructed as to preclude spillage or leakage to the environment;
 - (b) the material of which is not be susceptible to attack by the waste or liable to form harmful compounds with that waste; and
 - (c) designed as to ensure safe, complete or partial emptying.
- All recyclable wastes, including damaged or used batteries to be properly collected for eventual recycling.
- Domestic solid wastes to be regularly collected in bins or waste handling receptacles and disposed of to the satisfaction of the Local Authority.
- No waste of any type to be disposed of in any watercourse including drains, canals or in the surrounding environment.

5.3 Noise abatement

Noise is generated from electric motors such as stand-by generator and air-conditioning devices. As such, necessary precautions shall be taken to ensure noise emitted from the enterprise is within permissible limits as per the Environmental Standards for Noise Regulations under the EPA which stipulates:

Industrial Noise		Neighborhood Noise	
Time	Noise exposure limits	Time	Noise exposure limits
07.00-21.00 hrs.	60 dB (A) L_{eq}	07.00-18.00 hrs.	60 dB (A) L_{eq}
21.00-07.00 hrs.	55 dB (A) L_{eq}	18.00-21.00 hrs.	55 dB (A) L_{eq}
		21.00-07.00 hrs.	50 dB (A) L_{eq}

A tonal character adjustment of +5 dB (A) should be applied to the measured value where the noise has a definite continuous note such as a whine or hiss.

Mitigating measures include:

- Noise abatement measures shall be taken to avoid nuisances to the adjoining neighbours.
- Provision of appropriate noise attenuating materials/structures to abate noise generated from equipment such as generators, compressors.
- Proper maintenance of equipment and use of exhaust silencers.

5.4 Airborne issues (e.g. lead fumes emitted during welding of lead electrodes and lead dust)

Assembly of batteries may give rise to airborne issues such as lead fumes emitted during welding of lead electrodes and lead dust.

Mitigating measures include:-

- All air emissions from the enterprise and premises shall comply with the Environment Protection (Standards for Air) Regulations 1998.
- Installation of dust collectors within the enterprise
- Use of protective masks by staff
- The enterprise shall be kept clean and tidy at all times with good housekeeping and proper ventilation.

5.5 Fire/ Explosion Risks

Batteries, if not handled properly, may result to leakage of toxic substances and formation of explosive gas mixtures. Appropriate measures shall be taken to the satisfaction of concerned authorities, including Mauritius Fire and Rescue Service and the Ministry of Labour, Industrial Relations, Employment and Training in respect of all aspects of fire safety, prevention and fire-fighting.

Mitigating measures include:

- Batteries need to be stored in rooms equipped with adequate ventilation to extract any harmful or unpleasant fumes and prevent the formation of explosive gas mixtures.
- The floors of storage rooms for batteries need to be constructed with non-combustible material, liquid tight and resistant to the stored substances.

5.6 Other mitigating measures

- Necessary precautions should be taken to avoid disturbance to the neighbourhood by way of odour, dust, noise or traffic.
- Provision to be made for adequate parking, loading and unloading facilities.
- Safe storage of materials on site and stored materials not unduly visible or intrusive in the street scene.

5.7 Eco-friendly Measures and Sustainability

Prospective developers are advised to adopt best environment friendly practices such as use of energy efficient appliances and lamps.

Note:

- a. The import of batteries containing mercury is prohibited under the Consumer Protection (Control of Imports) Regulations 2017.
- b. Relevant organizations need be consulted with regard to occupational health and safety, traffic implications, fire clearance amongst others prior to embarking on the project to ensure compliance with their respective laws/regulations/standards.
- c. Non-compliance with environmental laws namely standards for air and noise is an offence under the EPA.

Copies of this guideline are available at the Department of Environment and on the website of the Ministry at <http://environment.govmu.org> ; the government's portal at <http://www.govmu.org>, including the websites of Local Authorities.