

SOP- 14Waste Management**Purpose:**

To set out a procedure for disposal of waste from transportation, warehousing, installation and maintenance activities under the programs in an environmental sound manner by complying with regulatory requirements.

**General Operating Procedures and Best Practices:****A. Procedure for hazardous waste**

The procedure for disposal of two key hazardous waste categories are described here. These are dismantled street lights and used oil. However, it is the responsibility of the EHSS department to ensure that all applicable hazardous waste is disposed in an authorized manner.

**i) Collection, transportation, storage, and disposal of dismantled lights**

The following procedure has been extracted from regulatory requirements, national and state level guidelines. The following steps must be followed:

- At the assembly point where the replacement of lights is taking place, there must be designated storage boxes for collecting the damaged luminaries. The damaged and undamaged lights should never be collected in the same box.
- While transporting these old lights from the assembly points to the warehouse, it must be stored separately in a covered container and should not be mixed with other waste materials.

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- At the warehouse there must be designated area for storing hazardous materials, and segregation between damaged and undamaged luminaries must be maintained.
- There must be adequate PPEs provided to the workers engaged in the collection, storage, loading and unloading work to prevent the exposure of workers with the toxic materials.
- Warehouse must have adequate ventilation arrangement to prevent the accumulation of toxic gases from the damaged bulbs and tubes
- There must be a legal agreement for the safe disposal or recycling of hazardous waste material between the vendor and the SPCB authorized hazardous waste recycling/disposal units
- The management must ensure that all the necessary records are maintained as per the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008

ii) Collection, transportation, storage, and disposal of used oil

The following procedure has been extracted from regulatory requirements, national and state level guidelines. The following steps must be followed:

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- Only authorized and trained personnel must remove used oil from the DG sets
- The used oil should be stored in separate containers, meant for the purpose. Storage in inappropriate containers should be strictly avoided
- The used oil should be stored in a cool, shady place, away from smoking areas, sources of ignition and fire
- There must be a legal agreement for the safe disposal or recycling of hazardous waste material between the vendor and the SPCB authorized hazardous waste recycling/disposal units
- Only SPCB authorized vendors should transport the used oil from one location to another
- The management must ensure that all the necessary records are maintained as per the Hazardous Waste Standards.
- Measures to be taken in case of hazardous oil spill
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- The following measures must be taken in the case of a hazardous oil spill:
- Assess the spill and categorize as major ( $\geq 500$  ml) or minor ( $< 500$  ml). For minor spill, the following remedial actions can be implemented by the site team. For major spills, external experts must be summoned with the help of EHSS department
- Inform the site representative and EHS coordinator immediately
- Cordon off the area (preferably using warning tape) and establish a no-smoking/fire zone in the vicinity
- Use appropriate Personal Protective Equipment and ensure that oil does not enter storm water drains, rivers or run into the sea
- If the spill has occurred on soft ground, dig the contaminated earth and refill with fresh earth
- Bund the area of spill immediately using sand, cloth or other appropriate material, as per availability on site
- The used absorbent material (contaminated earth, cloth, cotton or sand) should be treated as hazardous waste and be disposed in the applicable manner

SOP- 14Waste Management**B. Non-hazardous waste segregation**

In project operations, significant quantities of non-hazardous waste are also generated. This waste consists of the metal body parts of luminaries, glass cover, plastic parts, broken glasses, wires, paper, food, cloth etc. Due to the large scale of the project, the quantity of the waste generated is high and it needs to be disposed or recycled in an environmentally sound manner.

- i) Collection, Transportation, Storage, and Disposal of non-hazardous waste

The following procedure has been extracted from regulatory requirements, national and state level guidelines and industry best practices. The following steps must be followed:

- At the assembly point where the replacement of lights is taking place, there must be separate and designated storage boxes for collecting non-hazardous waste generated during the replacement process. Non-hazardous waste should not be mixed with the hazardous waste generated at the site.
- The colour of the boxes for storing hazardous and non-hazardous waste must be different, and workers must be aware to store the replaced items in the correct boxes.

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- The colour of the boxes for storing hazardous and non-hazardous waste must be different, and workers must be aware to store the replaced items in the correct boxes.
- While transporting these old bulbs and lighting materials from the assembly points to the warehouse, it must be stored separately for the hazardous materials to avoid the segregation at the warehouse.
- At the warehouse there must be designated area for storing non-hazardous materials, and segregation between damaged and undamaged luminaries must be maintained.
- There must be adequate PPEs provided to the workers engaged in the collection, storage, loading and unloading work to prevent the injuries from the broken glass pieces present in the waste.
- There must be a legal agreement for the safe disposal or recycling of waste material between the vendor and the PCB authorized hazardous waste recycling/disposal units.
- It should be ensured by the EHS coordinator and labour contractor that no waste is being disposed at the assembly point. Entire waste generated at the site must be brought back to the warehouse and then sent for the recycling or disposal via approved vendors.

SOP- 14Waste Management**C. E-waste**

E-waste to be disposed in line with the e-waste (Management and Handling) Rules, 2010. E-waste consumers should:

- Ensure that e-waste generated by them is channelized to authorized collection centre (s) or registered dismantler (s) or recycler (s) or is returned to the pick-up or take back services provided by the producers;
- Maintain records of e-waste generated by them in Form 2;

**D. Batteries**

Batteries to be sent back to the manufacturer or disposed in line with the Batteries (Management and Handling) Rules, 2001. The battery consumers should:

- Ensure that used batteries are disposed only through dealer/manufacturer/registered recycler/importer/reconditioned or at the designated collection centers
- File half-yearly return in Form VIII to the SPCB

SOP- 14Waste Management**Compliance to regulations/permits:**

All permits and regulations for generation, handling, transportation and disposal of waste

**Safety Precautions:**

Handling of waste, transportation of waste, storage conditions, disposal protocols and regulations

**Emergency Preparedness and Response (including PPE/First aid):**

Ensure the availability of first Aid Kits on Site and in Inspection Vehicles  
Contact List of Health units, Rescue Vehicles within easy reach





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#### Signage systems and symbols or coding:

Dedicated storage for each type of waste, labelling, consignment notes, authorization documentation etc.;

<p><b>Health Hazard</b></p>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<p><b>Flame</b></p>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<p><b>Exclamation Mark</b></p>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (Harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non-Mandatory)</li> </ul>
<p><b>Gas Cylinder</b></p>  <ul style="list-style-type: none"> <li>• Gases Under Pressure</li> </ul>	<p><b>Corrosive</b></p>  <ul style="list-style-type: none"> <li>• Skin Corrosion/Burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<p><b>Exploding Bomb</b></p>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<p><b>Flame Over Circle</b></p>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<p><b>Environment (Non-Mandatory)</b></p>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<p><b>Skull and Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute Toxicity (Fatal or Toxic)</li> </ul>

SOP- 14Waste Management**Inspection Procedures and Documentation required:**

Internal Audit (Monthly): (Waste Generation Log on site) Site engineer, Contractor - Interview with site employees, Discussions on waste generation and management records and reports availability on site. The waste management report availability on site. The training to the employees and contractors are provided and they are well aware about the potential risks during the handling and storage and transportation protocols for various types of wastes and disposal requirements and responsibilities;

**DOCUMENTS:**

- ❖ Waste classification report, waste generation reports Disaster Management Plan, Emergency Response Plan and Protocols
- ❖ List of subcontractors, Local Body, Scrap Dealers selected by Local Body and major material suppliers including address, telephone number, and name of contact person,
- ❖ Training Records;
- ❖ Daily total number of luminaries replaced at the assembly point and the number of luminaries getting damaged during the changing process,
- ❖ SPCB authorization for Hazardous waste generation, storage, & disposal

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- ❖ Total quantity of waste stored in the warehouse on each day and the percentage of waste sent for reuse, recycle and disposal, categorized as per type of waste
- ❖ Records of the work permit issued by the EHS coordinator issued at the site
- ❖ Manifest (Form-13) of disposed hazardous waste
- ❖ Annual return (Form-iv) to SPCB by 30th June each year
- ❖ Half-yearly return in Form VIII to the SPCB
- ❖ E-waste generation record in Form 2
- ❖ Agreement with the PCB authorized hazardous waste recycling/ reuse/ disposing unit
- ❖ Records of the injuries to the workers during the waste segregation, storage, loading and unloading process

SOP- 14Waste Management**Site management:**

## HOUSEKEEPING STANDARDS

- A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection.
- B. Protection and Control: waste storage as per waste management plan
- C. Pollution Control: Containment at storage locations, Spill prevention and clean-up plan.
- D. Scope of Final Disposal: to authorized agency/designated agency as per waste management plan and institutional mechanism

**Info and Instructions to be passed on to communities:**

- to classify the waste
- to ensure dedicated storage location for various types of waste
- storage conditions and control measures for pollution prevention
- final disposal plan