

# SOP 02 – Waste Management

## S02.1 Purpose

In the process of the replacement of old street luminaire with the new LED lights, Hazardous waste is generated due to the presence of toxic material inside the bulbs and tubes. Incandescent bulbs and High Pressure Sodium Vapour based luminaire (HPSV) might contain lead. Fluorescent lights both in form of FTLs (tube lights) and CFLs (bulbs), HPSV, and Metal Halide based luminaires contain toxic levels of mercury. MH bulbs also contain iodine and other toxic chemicals. The toxic material present inside the luminaire has the potential to contaminate environment and cause serious health impacts to the workers coming in its contact. The purpose of this standard is to set out a procedure for disposal of waste in an environmental sound manner by complying with regulatory requirements.

## S02.2 Scope

The procedure is applicable to EESL and all vendors, their subcontractors (and all levels of supply chain) at EESL office locations and for street lighting project

## S02.3 Definition

Hazardous waste	These wastes belong to a category of special wastes containing certain chemicals, metals and pathogenic organisms which can cause damage to the environment even at low levels of concentration. These wastes are so defined because of their characteristics such as toxicity, corrosiveness, flammability and reactivity.
Non-hazardous waste	Wastes that are not classified as hazardous waste, such as domestic waste, office waste, food waste, etc.
e-waste	Waste electrical and electronic equipment, whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded
Battery	Lead acid battery which is a source of electrical energy and contains lead metal

## S02.4 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 authorised manner.

### S02.4.1 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.

- 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

#### S02.4.2 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:

- 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 (Management, Handling and Transboundary Movement) Rules, 2008

#### Measures to be taken in case of hazardous oil spill

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

#### S02.5 Non-hazardous waste segregation

In EESL's office and project operations, significant quantities of non-hazardous waste is 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.

#### S02.5.1 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.
- 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.

#### S02.6 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 center (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

#### S02.7 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/reconditioner or at the designated collection centres
- File half-yearly return in Form VIII to the SPCB

## S02.8 Roles and responsibilities for waste management

S. No	Ownership	Responsibility
1	EHSS department	<ul style="list-style-type: none"> <li>▪ Ensure that all EHS requirements are implemented at the site.</li> <li>▪ Ensure that all the workers are using PPEs and following SOPs.</li> <li>▪ Ensure that no waste is being disposed in an unauthorized manner</li> <li>▪ Monitor the waste disposal methods at office locations and various sites on a periodic basis</li> <li>▪ Compile the observations and non-compliances and report to project teams for corrective action</li> </ul>
2	Project teams	<ul style="list-style-type: none"> <li>▪ Communicate the SOP to all vendors and their entire supply chain</li> <li>▪ Conduct announced and unannounced visits to waste segregation and collection points to understand non-compliances</li> <li>▪ Report anomalies to the EHSS department immediately</li> <li>▪ Take responsibility for submission of monitoring reports on a regular basis to the EHSS department and responsibility of facilitating the implementation of corrective actions</li> </ul>
3	Vendor	<ul style="list-style-type: none"> <li>▪ Follow the SOP and communicate it to its entire supply chain</li> <li>▪ Ensure the safe storage and disposal of hazardous waste material.</li> <li>▪ Must provide safe and designated space in the warehouse for the storage of waste materials.</li> <li>▪ Must ensure that all the EHS requirements are implemented throughout the process.</li> <li>▪ Must have a legal agreement with the PCB authorized waste handling unit.</li> <li>▪ Prepare periodic monitoring reports as per the prescribed format</li> <li>▪ Take primary responsibility of the corrective action and report back to the project team and EHSS department</li> <li>▪ Participate in the announced and unannounced reviews and provide all information sought</li> </ul>
4	Labour Contractor	Ensure that all the workers are following SOP and report non-compliance immediately to the vendor
5	Employee/ Labourer/ Worker/	Follow the SOP and report non-compliance to the vendor/ EHSS department

## S02.9 Documentation to be maintained for waste management

- 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
- 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

## History of amendments

The latest versions of the Documentation Format must be used at all times. This page needs to be updated whenever there is a change in the version number of the documents.

S. No	Date of amendment	Version	Details of amendment
1.	DD.MM.YYYY	01	Initial approval of the documentation format

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**Prepared by**

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