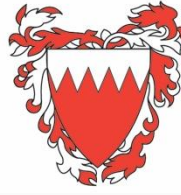


Kingdom of Bahrain
Supreme Council for Environment



مَمْلَكَةُ الْبَحْرَيْنِ
الْمَجْلِسُ الْأَعْلَى لِلْبَيْئَةِ

CONDITIONS FOR HANDLING HAZARDOUS WASTE

Waste Management Section – Environmental Assessment and Control Directorate

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1- SPENT POT LINING (SPL) & ALUMINUM DROSS WASTES

1.1 DESCRIPTION AND DEFINITIONS:

1.1.1 **Spent Pot lining (SPL)** is a waste material generated in the primary aluminum smelting industry. Spent Pot lining is also known as Spent Pot liner and Spent Cell Liner. SPL is classified as hazardous waste which means that particular care must be taken in its handling, transportation and storage.



1.1.2 **Aluminum Dross** is a waste stream generated by aluminum smelters, caused by oxygen coming into contact and reacting with molten aluminum to form a 'scum' or 'oxide phase' on the top of the metal pool. The dross is found to be toxic and hazardous waste for the environment.



1.2 CONDITIONS FOR HANDLING:

1.2.1 SPL & Aluminum dross should be loaded into standard waste containers (fully covered container) and transported to the pre-treatment processing areas or temporary storage areas.

1.2.2 The SPL & Aluminum Dross should be handled utilizing proper tools, equipment, and machinery.

- 1.2.3 The SPL & Aluminum Dross should be handled by experienced and skilled manpower under supervision of the Waste Generator utilizing proper precautions, health and safety guidelines.
- 1.2.4 The volume of hazardous waste should not occupy more than 70% of the total storage area capacity.
- 1.2.5 The containers that are used for collection and storage should be clearly labelled, provide enough cover to keep the SPL dry and consideration should be made for proper ventilation requirements to prevent the build-up of any flammable gases or reaction with water.
- 1.2.6 The SPL & Aluminum dross Waste Generator should dedicate a proper covered and constructed storage building for SPL located on or near the point of generation which can store SPL from the location of generation until transportation is carried out to an approved treatment or disposal facility or for export to any outside destination approved by the SCE.
- 1.2.7 To ensure the stored SPL is kept dry and well ventilated at the same time, an overhanging roof/shed with natural ventilation and openings along the sidewalls are to be designed and provided.
- 1.2.8 The roof of the storage area should be sloped to allow water to run off and typically a water collection or redirection system should be in place to manage and store the water flow.
- 1.2.9 The storage flooring should be made with concrete with a layer of High-Density Polyethylene (HDPE) to avoid any leaks, spills and accumulated precipitation or effluent and prevent contaminants leakage into the ground water and soil. (Refer Guidance sketch attached as Appendix 1.1)
- 1.2.10 A fire detection system should be in place within the storage building as per Civil Defence instructions. The storage area should be approved by the Civil Defence.
- 1.2.11 Only authorized personnel trained in hazardous waste handling procedures should have access to the storage site.
- 1.2.12 Storage buildings that are designed to hold large volumes of SPL should install a gas detection system inside the building to monitor toxic or flammable gases in place to alert personnel if gas levels exceed acceptable limits.

1.2.13 Ensure that suitable fire extinguishers and spill clean-up material and equipment are available and accessible at the storage site.

1.2.14 The storage site should have proper waste hazardous waste signages and mentioning the type of waste stored.

1.3 Transportation:

1.3.1 During transportation, in case of any leak or incidental spill of waste, the Waste Transporter must take immediate and appropriate actions:

- An exclusive area must be reserved to contain the wastes.
- Put the sign board indicating the hazardous waste and type of material accumulated.
- Communicate with the Supreme Council for Environment & relevant authorities regarding the spill.
- The Waste Transporter and Waste Generator should utilize their sincere efforts to remove, contain and manage the wastes and reduce any related environmental or public health hazards.

2. FLY ASH WASTE

2.1 DESCRIPTION AND DEFINITIONS:

2.1.1 Fly ash is a fine powder that is produced when waste is burned inside incinerators. fly ash consists of products in particulate form which are produced either as a result of the chemical decomposition of burnable materials or are unburned (or partially burned) materials drawn upward by thermal air currents in the incinerator and trapped in pollution control equipment and it contains hazardous materials.



2.2 CONDITIONS FOR HANDLING:

- 2.2.1 The fly ash waste should be stored in proper steel barrels containers.
- 2.2.2 The steel barrels must always be tightly capped at all times except when handling or adding any waste.
- 2.2.3 Ensure that the fly ash is stored in a specified designated area and should not be mixed with other type of waste.
- 2.2.4 The floor of the designated storage area should be of concrete or any other suitable material that will prevent contaminants leakage into the ground water. (Refer Guidance sketch attached as Appendix 1.2)
- 2.2.5 Proper signage should be maintained mentioning the hazardous waste and type of waste/ material being stored in the designated area.

2.3 Transportation:

- 2.3.1 During transportation, in case of leak or any incidental spill of waste, the Transporter must take immediate and appropriate actions including:

- An exclusive area must be reserved to contain the wastes.
- Put the sign board indicating the hazardous waste and type of material accumulated.
- Communicate with the Supreme Council for Environment & relevant authorities regarding the spill.
- The Waste Transporter and Waste Generator should utilize their sincere efforts to remove, contain and manage the wastes and reduce any related environmental or public health hazards.

3. FLUORESCENT LAMPS & E-WASTE (WEEE)

3.1 DESCRIPTION AND DEFINITIONS:

3.1.1 **Fluorescent Lamps and Electronic & Electrical Equipment (E-WEEE)** is created when an electronic or electrical product is discarded after the end of its useful life. Waste of fluorescent lamps and electrical & electronic equipment is classified as



hazardous waste (e.g., Fluorescence Tube, Bulb lights, LED lights, halogen lights, Computers, Refrigerators, Washing Machines, AC's, TV's, Phones ... etc.).

3.2 CONDITIONS FOR HANDLING:

- 3.2.1 Waste from Electrical and Electronic Equipment (WEEE) must be stored in securely enclosed and robust weatherproof containers to prevent rainwater entry and minimize escape of any hazardous and mercury vapors.
- 3.2.2 Waste must be properly packed and secured into the containers to minimize movement and risk of breakage during any movement and transportation.
- 3.2.3 Ensure that the waste stored on specified designated area should not be mixed with any other type of incompatible waste.
- 3.2.4 The floor of the designated storage area should be of concrete or any other suitable material that will prevent contaminants leakage into the ground water (Refer Guidance sketch attached as Appendix 1.2)
- 3.2.5 Put the proper hazardous waste signage regarding the WEEE storage in the storing area.
- 3.2.6 Containers must be handled carefully during loading and unloading operation to minimize breakage e.g., damage from dropping the container or over stacking of lamps or containers leading to crushing of the contents. Smashing or breaking of lamps into the containers is unacceptable.

3.2.7 Ensure that suitable fire extinguishers and spill clean-up material and equipment are available.

3.3 Transportation:

3.3.1 During transportation, in case of leak or any incidental spill of waste, the Transporter must take immediate and appropriate actions including:

- The area may have to be enclosed to contain the wastes.
- Put the sign board indicating the hazardous waste and type of material accumulated.
- Communicate with the Supreme Council for Environment & relevant authorities regarding the spill.
- The Waste Transporter and Waste Generator should utilize their sincere efforts to remove, contain and manage the wastes and reduce any related environmental or public health hazards.

4. OILY WASTEWATER

4.1 DESCRIPTION AND DEFINITIONS:

4.1.1 **Oily Wastewater** is wastewater mixed with oil under a wide range of concentrations. The oil mixed in water can be fats, hydrocarbons, and petroleum fractions such as diesel oil, gasoline, and kerosene. Oily Wastewater classified as hazardous waste which means that particular care must be taken in its handling, transportation and storage.



4.2 CONDITIONS FOR HANDLING:

- 4.2.1 Oily Wastewater should be stored in proper waste container (e.g. septic tank or drums).
- 4.2.2 The septic tank or drums must be fully covered and should be opened only during adding any waste, removing waste or during inspection.
- 4.2.3 The oily wastewater should not be mixed with any other type of waste especially any industrial effluent or sewage.
- 4.2.4 In case the oily wastewater is stored in drums, the designated floor of the storage area should be of concrete or any other suitable material that will prevent contaminants leakage into the ground water.
- 4.2.5 Put the proper hazardous waste signages indicating the material that is stored in the storage area is hazardous.
- 4.2.6 The volume of wastewater containers should not exceed 75% of the tank or drums capacity to avoid any leakage or overflow.
- 4.2.7 The material and condition of the waste container should be of appropriate quality and free from any cracks or defects to avoid any leakages.

4.2.8 Ensure that suitable fire extinguishers and spill clean-up material and equipment are available.

4.3 Transportation:

4.3.1 During transportation, in case of any leakage or incidental spill of waste, the Transporter must take immediate and appropriate actions including:

- The area may have to be enclosed to contain the wastes.
- Put the sign board indicating the hazardous waste and type of material accumulated.
- Communicate with the Supreme Council for Environment & relevant authorities regarding the spill.
- The Waste Transporter and Waste Generator should utilize their sincere efforts to remove, contain and manage the wastes and reduce any related environmental or public health hazards.
- In case of spillage use proper absorbance to contain the spill and remove the contaminated waste only, finally follow the Supreme Council for Environments instruction to dispose the waste.

5. CHEMICAL WASTE

5.1 DESCRIPTION AND DEFINITIONS:

5.1.1 **Chemical Waste** is a waste that is made from harmful chemicals and it is any solid, liquid, or gaseous waste material that if improperly managed or disposed of may pose substantial hazards to human health and the environment. (e.g., Expired chemical, Damaged chemical products or any other chemical waste generated for industrial process ... etc.)



5.2 CONDITIONS FOR HANDLING:

- 5.2.1 Chemical waste should be stored in appropriate and compatible container. Usually, the original container from the approved manufacturer can be used as waste container. (Refer Guidance sketch attached as Appendix 1.2)
- 5.2.2 The chemical waste container must always be tightly capped and secured except when adding any waste. Use of Open containers are to be avoided due to evaporation, spills, and proper containment.
- 5.2.3 All containers containing chemical waste or effluent must be in good condition and not leaking.
- 5.2.4 All containers must be under the control and supervision of the Generator and stored in a manner that will not cause any spill or leak.
- 5.2.5 No other incompatible materials or wastes should be mixed with the chemicals waste.
- 5.2.6 All containers must be stored in a manner that readily allows for its inspection.
- 5.2.7 Ensure wastes are stored in an area that is inaccessible to the unauthorized persons. The area is to be clearly identified as a 'hazardous waste storage area'.

- 5.2.8 Put the proper signages indicating the material stored is 'hazardous'.
- 5.2.9 The Waste Generators are required to regularly inspect the storage areas and containers to check its integrity, status and any deficiencies that can cause any leaking or spillage.
- 5.2.10 The containers are to be stored at a proper location and at a convenient height to allow for its proper handling and management.
- 5.2.11 The storage area should be fire-resistant and constructed from non-combustible materials.
- 5.2.12 Ensure that suitable fire extinguishers and spill clean-up material and equipment are available.
- 5.2.13 The waste is to be segregated according to its composition and compatibility.

5.3 Transportation:

- 5.3.1 During transportation and in case of any leak or incidental spill of waste, the Transporter must take immediate and appropriate actions including:
- The area may have to be enclosed to contain the wastes.
 - Put the sign board indicating the hazardous waste and type of material accumulated.
 - Communicate with the Supreme Council for Environment & relevant authorities regarding the spill.
 - The Waste Transporter and Waste Generator should utilize their sincere efforts to remove, contain and manage the wastes and reduce any related environmental or public health hazards.
 - In case of spillage use proper absorbance to contain the spill and remove the contaminated waste only, finally follow the Supreme Council for Environments instruction to dispose the waste.

6. ASBESTOS WASTE

6.1 DESCRIPTION AND DEFINITIONS:

- 6.1.1 **Asbestos Waste** is a naturally occurring fiber that is used in construction and other industries (e.g., Asbestos Insulation, Asbestos Sheets for roof ... etc.) and its classified as hazardous waste.



6.2 CONDITIONS FOR HANDLING:

- 6.2.1 No open storage of asbestos waste is permissible. The designated hazardous waste storage area should be an enclosed area (Shed), taking care of the safety requirements. (Refer Guidance sketch attached as Appendix 1.2)
- 6.2.2 The volume of hazardous waste should not occupy more than 70% of the total storage area capacity.
- 6.2.3 Asbestos waste should always be packed in impermeable bags.
- 6.2.4 Put the hazardous waste signages indicating the type of material stored.
- 6.2.5 Only authorized personnel trained in hazardous waste handling procedures should have access to the storage site.
- 6.2.6 Signboards showing precautionary measures to be taken in case of normal and emergency situations should be displayed at appropriate locations.
- 6.2.7 Personnel handling the waste should always wear an approved respirator and disposable protective clothing (full PPE), decontaminate themselves before going into the uncontaminated or working areas.

6.3 Transportation:

6.3.1 During transportation, in case of any leak or incidental spill of waste, the Transporter must take immediate and appropriate actions including:

- The area may have to be enclosed to contain the wastes.
- Put the sign board indicating the hazardous waste and type of material accumulated.
- Communicate with the Supreme Council for Environment & relevant authorities regarding the spill.
- The Waste Transporter and Waste Generator should utilize their sincere efforts to remove, contain and manage the wastes and reduce any related environmental or public health hazards.

7. OILY SLUDGE WASTE

7.1 DESCRIPTION AND DEFINITIONS:

7.1.1 **Oily Sludge Waste** is a hazardous waste containing emulsified petroleum hydrocarbons, water, heavy metals, and solid particles. It poses a substantial threat to human health and the surrounding environment and is mainly generated during the production, refining, storage, and transportation of petroleum.



7.2 CONDITIONS FOR HANDLING:

- 7.1.1 Sludge waste must be stored in a secure container or lagoon or, in the case of dewatered sludge, in a secure place on land having proper and impermeable flooring.
- 7.1.2 The sludge must not be mixed with any other type of waste.
- 7.1.3 The floor of the designated storage area should be of concrete or any other material that will prevent contaminants leakage into the ground water.
- 7.1.4 Put the hazardous waste signages indicating the type of material stored.
- 7.1.5 Ensure that suitable fire extinguishers and spill clean-up equipment are available.

7.2 Transportation:

- 7.2.1 During transportation and in case of any leak or incidental spill of waste, the Transporter must take immediate and appropriate actions including:
 - The area may have to be enclosed to contain the wastes.
 - Put the sign board indicating the hazardous waste and type of material accumulated.

- Communicate with the Supreme Council for Environment & relevant authorities regarding the spill.
- The Waste Transporter and Waste Generator should utilize their sincere efforts to remove, contain and manage the wastes and reduce any related environmental or public health hazards.

8. CONTAMINATED SOIL WASTE

8.1 DESCRIPTION AND DEFINITIONS:

8.1.1 **CONTAMINATED SOIL WASTE** is any substance in the soil that exceeds naturally occurring levels and poses human health risks is a soil contaminant. (e.g., Contaminated soil with oil, Contaminated soil with chemicals ...etc.).



8.2 CONDITIONS FOR HANDLING:

- 8.1.1 The contaminated soil waste should be stored in proper waste container (e.g., steel barrels containers).
- 8.1.2 The waste container must always be tightly capped and secured except when adding any waste.
- 8.1.3 The waste container should be stored on the specified designated area and no other incompatible material or waste should be mixed.
- 8.1.4 The floor of the designated storage area should be of concrete or any other suitable material that will prevent contaminants leakage into the ground water.
- 8.1.5 Put the hazardous waste signages indicating the type of material stored.
- 8.1.6 Ensure that suitable fire extinguishers and spill clean-up material and equipment are available.

8.2 Transportation:

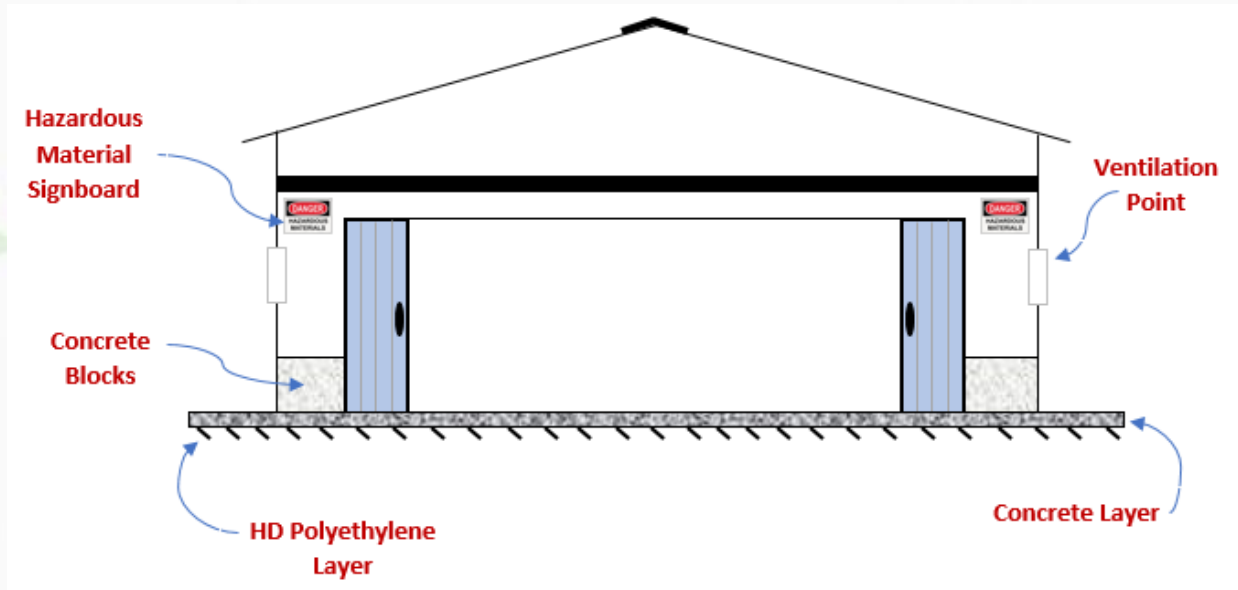
- 8.2.1 During transportation and in case of any leak or incidental spill of waste, the Transporter must take immediate and appropriate actions including:

- The area may have to be enclosed to contain the wastes.
- Put the sign board indicating the hazardous waste and type of material accumulated.
- Communicate with the Supreme Council for Environment & relevant authorities regarding the spill.
- The Waste Transporter and Waste Generator should utilize their sincere efforts to remove, contain and manage the wastes and reduce any related environmental or public health hazards.

APPENDICES

Warehouse Handling Conditions

Appendix 1.1:



Appendix 1.2:

