



SOP

Chemical Procurement, Storage and Handling for DPS


Revision List

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|--------------|-------------|------------|
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| 1 | | |
| 2 | | |
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1 Aim and Scope

Objective of this SOP is to specify detailed rules, times and responsibilities related to the procurement, storage and handling of chemicals at Delimara Power Station.

2 Reference

EN ISO 14001:04, clause 4.4.6

3 Terms and Definition

| | |
|-----|------------------------------------|
| RE | Responsible Engineer – Maintenance |
| RE | Responsible Engineer – Operations |
| PMO | Plant Maintenance Officer |
| MP | Maintenance Personnel |
| SOP | Standard Operating Procedure |
| ER | Environment Representative |

4 Responsibilities

Responsible Engineer (RE) - Maintenance

Ensures that personnel assigned to handle and transport chemicals are properly trained and equipped to handle chemicals safely, and prepared to contain and clean accidental spills.

Responsible Engineer (RE) - Operations

Regularly monitors and controls the use of the process related chemicals in the station according to this SOP

Plant Maintenance Officer (PMO)

Receives, and executes instructions from the RE and coordinates the handling and transportation of chemicals from one location to another within Delimara Power Station.

**Maintenance Personnel (MP)**

Carry out handling of chemicals from one location to another, and are responsible to store chemicals on site, under the supervision of the Stores Officer or PMO.

Stores Officer

Monitors and controls the supply, handling and proper storage of chemicals, and the provision of their respective SDSs as described in this SOP.

Chemist

Responsible for the up-keep of the 'Chemical Register' as defined in this SOP. Regularly updates the SDSs of chemicals included in the register on a 2 yearly basis (unless SDSs are superseded earlier) and forwards any updates or changes to H & S manager.

Head of Health and Safety

Responsible for the maintenance of the Controlled SDS Documents Database and the proper timely distribution of SDSs. Also responsible for regular checks required in the implementation of this SOP.

All employees

Act in accordance to the requirements of this SOP

5 Operative Rules

The RE and/or the Stores Officer are responsible to ensure that the pertaining parts of these procedures are followed when handling chemicals.

This procedure defines the training requirements, handling methods and precautions to be taken during transportation of chemicals from one site to another, in order to minimize any hazards these chemicals might pose to human beings as well as to the environment. Refer to **Annex 1 – Drawing DPS/XZ/92 – Chemical Storage and Dosing Area.**



5.1 Chemicals handling planning

- The person planning the transfer of chemicals must be informed of quantities to be transferred, the type of packaging and the scheduled locations when assessing the methods and means necessary for the handling.
- The person in charge of the transfer and/or handling of chemicals must:
- CLARLY identify the chemical and be aware of the hazards involved.
- Consult Safety Data Sheet (SDS) or seek expert advice when in doubt.
- Ensure that the chemicals being sanctioned for transfer are stored and stacked in a correct and safe manner as detailed in the subsequent clauses of this SOP to avoid accidental spills and possible injuries.
- The PMO must ensure the availability of competent personnel, the appropriate Personal Protective Equipment, adequate means of transportation and spill control materials

5.2 General safety requirements

When a dangerous chemical is handled, the following recommendations should be observed:

- MP assigned should be trained in chemical handling and spill management
- The PMO must ensure that adequate manpower is assigned to the task in order to carry out the job safely.
- PMO has to ensure that the competent personnel are provided with the appropriate PPE.
- MPs must be given appropriate means to be able to move the chemicals around such as fork lifters and trailers. MPs must avoid spills during transportation.
- Adequate materials should be readily available for spill management and the Emergency Response Plan in case of "Chemical Spills" is initiated. The RE is to be informed accordingly and an Incident Report compiled. (refer to Clause 5.9 below).

5.3 Chemicals Procurement

When purchasing chemicals by direct order or by tender the purchasing officer (Engineer, Procurement Officer, Chemist and Stores Officer) has to ensure that the following rules/recommendations apply:



- Wherever possible, chemicals and their compounds shall be purchased free from Mercury, Chromium, and Zinc (refer to IPPC permits).
- Choose CFC and HCFC-free sprays and products.
- Chemicals must be REACH registered in compliance with LN61 of 2008 plus any amendments. Tenderer must submit the registration details and certificate / documentation of the chemical being purchased. If a supplier does not yet possess a certificate showing that a substance has been registered because the chemical has not yet been issued with a certificate, the officer should request a confirmation letter proving that the substance is in the process of being registered.
- Chemicals must also be CLP compliant according to LN214 of 2009.
- When a new hazardous or non hazardous chemical is needed or a new product is proposed by a supplier, procurement shall ask the supplier to send the "Safety Data Sheet (SDS)" prior to adjudication. If necessary procurement may consult with the Health and Safety responsible and the ISO 14001 coordinator (or with the Environmental representative) to check for any health, safety and environmental aspects. A risk assessment should also be carried out.
- Furthermore, the officer who intends to purchase a chemical already in use must ask for the SDS (safety data sheet) of the particular chemical at the quotation/tendering stage prior to the purchase of the chemical and the bidder must supply it. Only offers that are accompanied by the relevant SDS sheet will be considered.
- When chemicals are purchased through a purchase order the stores officer is to ensure that an SDS is supplied with the goods.
- The supplier should be informed that he is obliged to supply Enemalta with any updates:
 - (a) as soon as new information which may affect the risk management measures, or new information on hazards becomes available
 - (b) once an authorization has been granted or refused
 - (c) once a restriction has been imposed

The new, dated version of information, identified as 'Revision: (date)', shall be provided free of charge on paper or electronically to Enemalta within the preceding 12 months. Any updates following registration shall include the registration number.

- Wherever possible, avoid buying toxic and very toxic substances as well as carcinogenic substances.



- Preference should be given to products with less dangerous characteristics: for example water-based paints instead of solvent-based paints, paints without “heavy metals” (such as lead or chromium), cleaning products with a low chlorine content. The toxicity of different chemicals can be compared by checking the lethal concentration 50 percent kill (LC50) or the lethal dose 50 percent kill (LD50)
- Ask suppliers to forward any information related to new products that are less dangerous and that could be better suited for the application in the future.
- Do not accept chemicals if the container/drum is damaged or not labelled properly or if the product is not identified.
- Before buying more products be sure that any legal limit (for example the total quantity that can be stored) is not exceeded.

5.4 Labelling and identifying chemicals

A list of chemicals currently being used at Enemalta can be extracted from SAP. The persons responsible for the handling and storage of chemicals shall ensure that the following rules are put in place:

- All bunded areas and basins, vessels, drums or cans and pipelines containing dangerous chemicals shall be properly labelled. The label shall not be removed.
- In case the container or packaging needs to be changed, Enemalta personnel must fix a label to the new container. Ensure that the label is firmly affixed to the container. Otherwise one can write directly onto the new container the name of the dangerous chemical as indicated in the original label. One can also write the common name of the chemical which is easily understood by the personnel who will be using it. Make sure that the original label is removed from the old container eliminating any possibility of incorrect use of the container.
- When identifying containers, cans, etc. of chemicals be sure to use a permanent marker, write clearly (preferably in block letters) and in an adequate font size to allow for easy identification.

Whenever any of the above listed rules is not followed, the personnel who have identified the nonconformity should inform the Responsible Person of this so that the latter will take proper corrective action to address it.



5.5 Handling chemicals

All personnel handling chemicals should adhere to the following rules and recommendations:

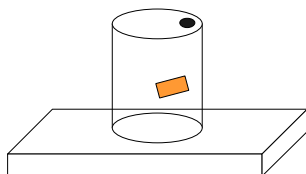
- Use of PPE is mandatory
- Mixing or pouring of chemicals should be performed on waterproof surfaces to prevent soil contamination.
- Handling of dangerous chemicals (transportation, change of containers, etc.) should always be kept to a minimum.
- Do not leave chemical containers open. Always keep them closed when not in use.
- Avoid mixing dangerous chemicals. Remember that mixing of incompatible chemicals can induce emissions of toxic gases and other dangerous reactions.
- Use the right amount of product (check product instructions to dilute chemicals).
- Never leave dangerous chemicals unattended.
- Chemicals which are no longer in use or if no information is available as to their application or use should be disposed of as hazardous waste.
- Chemical safety data sheets for each chemical being used, and safety and environmental information shall be available on site where the chemicals are being used.

5.6 Storage of chemicals

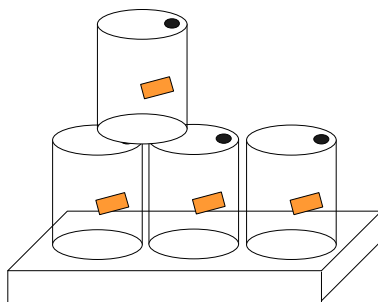
Persons responsible for the storage of chemicals (Stores officers, PMO, RE) shall ensure that the following rules are put into practice:

- Verify that all legal limits related to chemical storage are being met (e.g.: maximum quantities declared in the safety report submitted to the COMAH competent authority).
- Define the storage areas for chemicals and ensure that their respective personnel are informed of the practices as indicated in this SOP. All dangerous chemicals must be located in the appropriate storage area unless currently in use.
- Storage areas should always be bunded and covered to avoid leaching of pollutants through rainwater.
- The capacity of the chemical storage basin or containment should always be the greater of the following two options:
 - Either 110% of the capacity of the largest container in the bunded area;
 - Or 25% of the total volume of chemical containers in the bunded area.

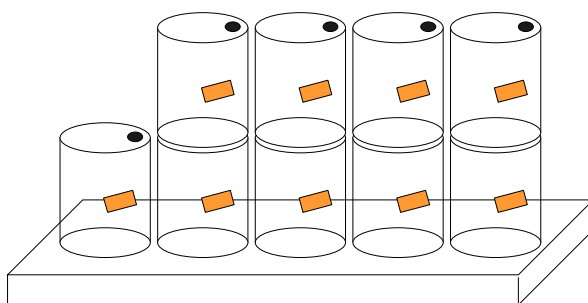
CASE 1: The capacity of the containment basin should be equal to 110% of the total capacity of the container.



CASE 2: The capacity of the containing basin should be equal to 110% of one of the four containers.



CASE 3: The capacity of the containing basin should be 25% of the total volume of the drums.



- Any spill occurring within the bunded storage area shall be isolated from the drainage and sewage systems. Resulting waste will be disposed of as Hazardous Waste. Contaminated absorbent pads under waste code 15 01 02*, contaminated aqueous liquid (if any) under EWC code 16 10 01*
- Be sure that the capacity and characteristics of storage areas, shelves and any other device used to store chemicals is adequate for the specific operation.
- Make sure that there is good housekeeping in storage areas



- Chemicals cannot be stored and/or located in areas such as passageways, vehicles, and so on.
- Ensure that incompatible chemicals are segregated within the storage areas. Chemical products must be stored according to their compatibility. Acids are to be stored away from bases (such as Alkalis). Flammable products are to be stored away from all other products and especially away from potential fire hazards.
- Storage areas for explosives shall be designed in such a way as to prevent hits, falls or any other potential cause of explosion and to protect the surroundings against explosions.
- Avoid storage of chemical products under direct sunlight, in warm areas or near heat sources as much as practically possible.
- Refer to label and Safety data sheet provided by the supplier for correct storage of each substance.
- Certain chemicals or substances have to be stored in well ventilated areas or at a specific humidity and temperature.
- Be sure that all containers such as drums and their lids are in good condition, they are safe to use and there is no possibility for spills or leakages.
- MPs must first remove any empty chemical containers or bags from the site where the new containers are to be stored. These must be disposed of Hazardous Waste under EWC code 15 01 10 *.
- Whenever necessary MPs will connect the new chemical containers and check for any damages and/or leakages prior to leaving the site. They must inform the PMO if any mishaps have occurred.

5.7 Control and monitoring activities

The Operations RE for Delimara Power Station has the responsibility to:

- Check periodically for correct identification, handling, use and storage of process related chemicals at point-of-use;
- Check periodically that all waterproof areas where chemicals are located are in good condition and that there are no surface irregularities or cracks. This is especially important for storage of large containers;
- Check periodically for spills and leaks;




- Check periodically on the correct use of products by Enemalta operations personnel. If necessary, the Operations RE can require that personnel undergo specific training.
- The Stores Officer shall conduct weekly checks within the storage areas indicated in Annex 3 – Template 23.5 – Chemicals Stores and Lube Oil Stores, performing and recording the checks included in the said template.
- Visual checks shall suffice.
- Checks shall be done weekly and recorded in **Annex 3 – Template 23.2 – Phase 1 – Turbine and Boilers, Annex 4 - Template 23.3 – Phase 2B, Annex 5 – Template 23.4 – CWP Area and Annex 6 – Template 23.5 – Chemicals stores and Lube Oil Stores**

5.8 Monitoring and Control of SDS

'DOC 1 – Tender Clauses related to Enemalta Environmental Management System' clearly indicates that all relevant chemicals are to be accompanied by an SDS. It is important to ensure that the following procedure is implemented:

- When new chemicals are required the procedure stated in Clause 5.3 - Chemicals Procurement needs to be followed.
- Chemist is responsible for the Chemical Register which is a register of all chemicals used in the plant of quantities delivered in containers/bag. All chemicals listed in this register require an SDS.
- The stores officer is to ensure that all chemicals arriving at the stores, must be accompanied by an SDS. In the event that an SDS is not submitted, the Store Officer is to contact the supplier to submit the SDS. The SDS is to be forwarded to the Chemist and the Stores Officer will keep a copy of the SDS, stamped "unofficial" in a file.
- The chemist is to update the Chemical Register indicating clearly the date and version of the SDS.
- The Chemist is to forward all SDS's to the Head of Health and Safety. SDS's are to be organized by scientific/brand name and active ingredient.
- The Head of Health and Safety is responsible for distribution of the SDS. The SDS will be distributed on:

| | | |
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- (i) **The Portal.** This will be a single folder, with chemicals listed in alphabetic order according to the scientific/brand name followed by the active ingredient.
 - (ii) To the **Station Manager** who is responsible for placing the SDS on site and informing the Head of Health and Safety the location of the SDS.
 - (iii) **Stores Manager** and also he stores where the chemical is kept
 - (iv) To the **Security Guards, Clinic, Operations Engineers Phase 1, Maintenance Workshop**
- The Head of Health and Safety is responsible to ensure that the Health and Safety Enforcement Officers carry out inspections according to **Annex 1 - Drawing DPS/XZ/92 – Chemical Storage, Dosing Area and location of SDS** to ensure that the distribution and installation of the SDSs has been effective. Enforcement Officers are to carry out inspections every 6 months and are to fill in **Annex 8 - Template 23.7 – SDS checklist.**
 - Every 3 months the Stores Manager is to forward a list extracted from SAP of the chemicals in stock to the Chemist. The Chemist will review the list and update the chemical register. If chemicals have been exhausted they are to be removed from the list. If new chemicals are in use and require an SDS, the chemist is responsible for obtaining the SDS. SDS will then be distributed to the Head of Health and Safety and procedure above is followed.

5.9 Abnormal conditions and emergency situations

In case of an accident or emergency such as spills, dangerous chemical reactions, etc, the RE shall ensure that the following recommendations are followed:

- Wear the necessary safety protection devices (gloves, glasses, etc.);
- identify the dangerous chemical causing the problem;
- ask for the intervention of the emergency response team;
- if the level of risk is acceptable, turn off taps and valves in order to stop the spills, and to avoid more of the chemical reaching the accident area and to stop it from reaching unprotected areas, such as areas which are not waterproof, sewage discharges, etc.
- close off the accident area;



- if the danger level is acceptable, use appropriate materials to clean up the spill; do not use rags, sawdust or other combustible materials to collect combustible agents or flammable chemicals;
- Only allow use of the area when the situation has been restored and everything is back to normal;
- In case of damage to a container, replace the container and be sure that it is clearly and correctly identifiable.
- Proper absorbent materials should always be readily available for use close to all chemical storage and handling areas.
- Any accidents should be recorded in **Annex 2 – Template 23.1 – Chemical Spill Incident Report**

5.10 Use of chemical products by third parties within Enemalta installation


The good practices listed in this SOP must be followed by any other party which handles and uses dangerous chemicals within Enemalta installations and working areas. Particularly, this means that providers/contractors must adopt the same behaviour of Enemalta personnel when using chemical products in Enemalta. The Environmental coordinator may be consulted by Procurement to help define proper contract rules and also for any pertinent information included in this SOP.

Procurement shall inform the contractor of these good practices and shall make sure that the latter has clearly understood these good practices for chemical handling and shall abide by them. EMC shall demand that any identified breach or failure to abide to EMC's practices shall be remedied immediately.

5.11 Reporting

Annex 2 – Template 23.1 –Chemical Spill Incident Report will be compiled only in the case of an incident. The reporting person together with the Engineer is to fill in the form which must be sent immediately to the Station Manager for further action.

Annex 3 – Template 23.2 – Phase 1 – Turbine and Boilers, Annex 4 - Template 23.3 – Phase 2B, Annex 5 - Template 23.4 – CWP Area and Annex 7 - Template 23.6 - DM

| | | |
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Plant Area are to be filled in weekly by the operations RE. Once a month the Operations RE is to forward the original copy to the Station Manager and retain a copy for reference.

Annex 6 - Template 23.5 – Chemicals stores and Lube Oil Stores is to be filled in weekly by the Stores Officer. Once a month the Stores Officer is to forward the original copy to the Station Manager and retain a copy for reference.

Annex 8 - Template 23.7 - SDS Checklist is to be compiled every 6 months and is to be forwarded to Head of Health and Safety. The Head of Health and Safety is to forward a copy to the station manger and is to retain a copy for reference.

6 Documents

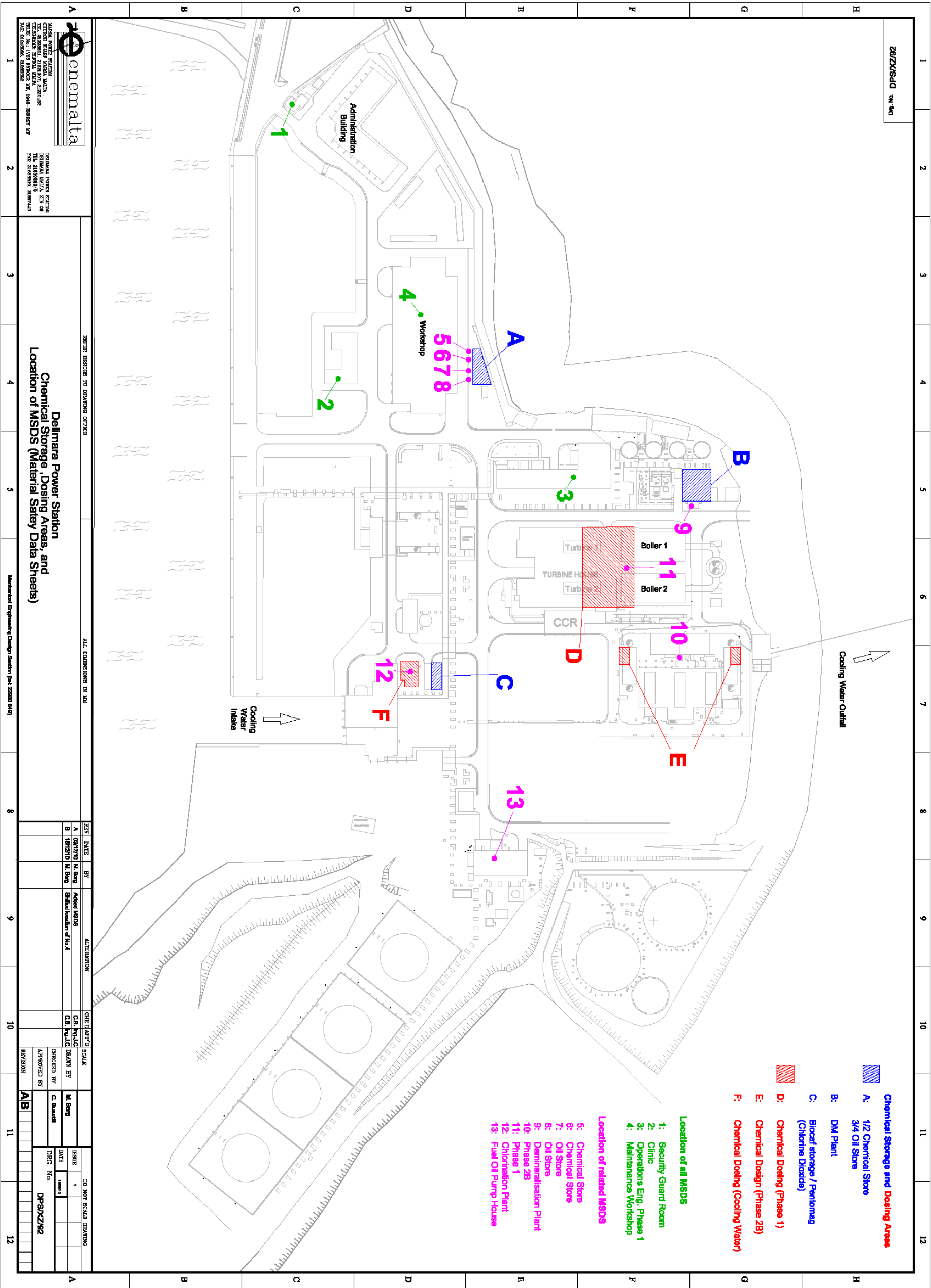
SOP DPS 29 - Waste Management Procedure

DOC 1 – Tender Clauses related to Enemalta Environmental Management System



Annex 1

Drawing DPS/XZ/92 – Chemical Storage and Dosing Area Plan





Annex 2

Template 23.1 – Chemical Spill Incident Report

**Template 23.1 – Chemical Spill Incident Report**Date of Incident Time of Incident Reporting Person

Location/Area if Incident

Chemicals/Hazardous materials involved

Estimated quantity of spilled material and Category (minor or major spill)

Any personnel who sustained injuries (names and type of injury)

Describe how the spill occurred to the best of your knowledge. Include any relevant circumstances in as much detail as possible

What containment measures were taken to control the spill?

What corrective actions were taken to control and cleanup the spill? (Procedure and materials used)

How was the waste generated in the cleanup disposed of?

List any existing or potential hazards that either caused or resulted from the incident

Engineer's Signature: Compilation Date: **Signed Document must be forwarded to Manager Immediately**



Annex 3

Template 23.2 – Phase 1 – Turbine and Boilers - Chemical Handling – Weekly monitoring

| Chemical Dosing Skids | HP Dosing | | LP Dosing | | GSCW Dosing | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Yes | No | Yes | No | Yes | No |
| Is skid and/or container properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is container damaged? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all covers in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there any evidence of leaks on pumps and piping? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there any evidence of leaks from bund or its drain? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the bunds clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are drain valves or drain taps closed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the chemical's latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the chemical's supply bags in closed container? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the nearby safety shower fully functional? | | | | | | |
| Are the recommended PPE being used during handling? | | | | | | |
| Is spill clean-up material and equipment accessible? | | | | | | |

[illegible]



**Template 23.2 – Phase 1 – Turbine and Boilers - Chemical Handling –
Weekly monitoring (pg 2 of 2)**

| 180 Ltr Ammonia Reserve Tanks | GSCW Dosing | |
|--|--------------------------|--------------------------|
| | Yes | No |
| Are containers properly placed above bunds? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there any leaks from container? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are containers properly sealed? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are containers properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there any leaks from containment bund and its drain? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are bunds clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are drain valves or drain taps closed? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the chemical's latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> |

| Boiler' MgO dosing skid | Yes | No |
|---|--------------------------|--------------------------|
| Is skid and/or container properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the IBC properly placed above secondary containment? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is container damaged? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all covers in place? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there evidence of leaks on pumps and piping? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the pumps' drip-tray clean? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the bunds' drain valve or plug closed? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are bunds clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the chemical's latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> |

Comments:

Date: _____

Engineer's Signature: _____



Annex 4

Template 23.3 – Phase 2B – Chemical Handling – Weekly monitoring



**Template 23.3 – Phase 2B –Chemical Handling –
Weekly monitoring (Pg 1 of 2)**

Week: _____

| HRSO 3A Area | Tri-sodium Phosphate | | Ammonia | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| | Yes | No | Yes | No |
| Is skid and/or container properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is container damaged? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all covers in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there any evidence of leaks on pumps and piping? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there any evidence of leaks from bund or its drain? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the bunds clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are drain valves or drain taps closed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the chemical's latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the nearby safety shower fully functional? _____ | | | | |
| Are the recommended PPE being used during handling? _____ | | | | |
| Is spill clean-up material and equipment accessible? _____ | | | | |

| HRSO 3B Area | Tri-sodium Phosphate | | Ammonia | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| | Yes | No | Yes | No |
| Is skid and/or container properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is container damaged? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all covers in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there any evidence of leaks on pumps and piping? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there any evidence of leaks from bund or its drain? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the bunds clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are drain valves or drain taps closed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the chemical's latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the nearby safety shower fully functional? _____ | | | | |

**Template 23.3 – Phase 2B –Chemical Handling –
Weekly monitoring (Pg 2 of 2)**

| 180 Ltr Ammonia Reserve Tanks | Tank 1 | | Tank 2 | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| | Yes | No | Yes | No |
| Are containers properly placed above bunds? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there any leaks from container? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are containers properly sealed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are containers properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there any leaks from containment bund and its drain? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are bunds clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are drain valves or drain taps closed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the chemical's latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Turbine Hall – Waste Oil Container | Yes | No |
|--|--------------------------|--------------------------|
| Is the container properly placed above bunds? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there any leaks from container? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are containers properly fitted with a funnel? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are containers properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is container full and needs replacement? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there any leaks from containment bund and its drain? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are bunds clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are drain valves or drain taps closed? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there visible signs of spills? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is spill containment and cleaning material accessible? | <input type="checkbox"/> | <input type="checkbox"/> |

Comments:

Date: _____

Engineer's Signature: _____



Annex 5

Template 23.4 – CWP Area – Chemical Handling – Weekly monitoring



**Template 23.4 – CWP Area – Chemical Handling –
Weekly monitoring (pg 1 of 2)**

Week: _____

| Anti-Fouling chemicals' containers and skids: | Sulphuric Acid | | Sodium Chlorite | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| | Yes | No | Yes | No |
| Is skid and/or container properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the containers damaged? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all covers in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there any evidence of leaks on pumps and piping? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the bunds' sump valve/plug closed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the bunds and sump clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the chemical's latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the nearby safety shower fully functional? | | | | |
| Are the recommended PPE being used during handling? | | | | |
| Is spill clean-up material equipment accessible? | | | | |

Chemicals' IBC Storage

Which chemicals are being stored?

| | | |
|--|--|--|
| | | |
| | | |

| | Yes | No |
|---|--------------------------|--------------------------|
| Are there any compatibility issues among chemicals stored? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all IBC's properly labelled according to chemicals? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are any of the IBC's damaged? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the IBC's properly stacked? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all IBC's properly sealed or properly closed? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all IBC's lying within the containment bunds? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there any signs of spills? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the bunds' sump empty and clean? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the latest SDS versions available? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is spill clean-up material and equipment accessible? | <input type="checkbox"/> | <input type="checkbox"/> |

| Ferrous Sulphate Dosing: | Yes | No |
|---|--------------------------|--------------------------|
| Is skid and/or storage container properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the containers damaged? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all covers in place? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there any evidence of leaks on pumps and piping? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the bunds' sump valve/plug closed? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are the bunds clean and empty? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the chemical's latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> |

Comments:

This image shows a single page of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Date: _____

Engineer's Signature: _____



Annex 6

Template 23.5 – Chemicals stores and Lube Oil Stores – Weekly monitoring



**Template 23.5 – Chemicals stores and Lube Oil Stores –
Weekly monitoring (Pg 1 of 2)**

Week: _____

| Chemicals store 1 | | Yes | No |
|--------------------------|---|--------------------------|--------------------------|
| 1. | Is the shed properly locked? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Is the shed lighting sufficient? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Are there any abnormal smells issuing from shed? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Are all containers placed above secondary containment? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Are all containers properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Are all containers properly sealed or tightly closed? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Are chemicals placed according to assigned location? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Are there any issues of chemical compatibility? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Are any of the containers damaged? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Is there any evidence of leaking container/s? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Are there any signs of spills? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Are the secondary containments clean? | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Are all the latest versions of SDS's accessible? | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Are clean replacement containers available? | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Is spill clean-up material accessible? | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Is the eyewash kit replenished? | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Is the nearby external emergency shower fully functional? | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Is the fire fighting equipment in place? | <input type="checkbox"/> | <input type="checkbox"/> |

| Chemicals store 2 | | Yes | No |
|--------------------------|--|--------------------------|--------------------------|
| 1. | Is the shed properly locked? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Is the shed lighting sufficient? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Are there any abnormal smells issuing from shed? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Are the bags properly stacked? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Are the bags properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Are the bags located on assigned shelving? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Are there any issues of chemical compatibility? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Are there any damaged bags? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Are there any chemical spills? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Are clean replacement container bins available? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Is spill clean-up material accessible? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Is the eyewash kit replenished? | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Are all the latest versions of SDS's accessible? | <input type="checkbox"/> | <input type="checkbox"/> |



**Template 23.5 – Chemicals stores and Lube Oil Stores –
Weekly monitoring (Pg 2 f 2)**

| Turbine Oil Store | | Yes | No |
|--------------------------|---|--------------------------|--------------------------|
| 1. | Is the shed properly locked? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Is the shed lighting sufficient? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Are all drums properly stacked? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Are all drums properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Are all drums/containers properly sealed? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Are any of the drums damaged or heavily corroded? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Are small oil containers properly stacked on shelving? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Is there any evidence of leaking container/s? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Are all the latest versions of SDS's accessible? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Are clean replacement empty drums/containers available? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Is spill clean-up material accessible? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Is there any leaked oil in store's sump? | <input type="checkbox"/> | <input type="checkbox"/> |

| Lube Oil Store | | Yes | No |
|-----------------------|---|--------------------------|--------------------------|
| 1. | Is the shed properly locked? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Is the shed lighting sufficient? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Are all drums properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Are any of the drums damaged or heavily deteriorated? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Are any of the spouts fitted to 'in use' drums leaking? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Are all "in use" drum spouts lying above drip-trays? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Are drip-trays empty and clean? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Are all the latest versions of SDS's accessible? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Are clean replacement empty drums available? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Is spill clean-up material available? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Is there any leaked oil in store's sump? | <input type="checkbox"/> | <input type="checkbox"/> |

Comments:

Stores Officer Signature: _____

Date: _____



Annex 7

Template 23.6 - DM Plant Area – Chemical Handling – Weekly monitoring



Template 23.6 – DM plant area – Chemical Handling – Weekly monitoring

Week: _____

| DM Lines Regeneration Chemicals | | Conc. Sulphuric Acid Storage | | Conc. Caustic Soda Mixing tank | |
|---------------------------------|---|------------------------------|--------------------------|--------------------------------|--------------------------|
| | | Yes | No | Yes | No |
| 1. | Is storage tank properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Is there evidence of spill in tank bounds? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Are bunds and sump drain to neutralising pit clear? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Are there any crystalline formations on tank's piping and mountings? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Are tank lids and/or air breathers properly in place? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Is there any evidence of leaks on metering tanks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Are there any spills in bunds around metering tanks and dilution skid? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Are there any crystalline formations on plant dosing pipes and mountings? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Are latest versions of SDS's accessible? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Is the area emergency shower fully functional? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Are the handling personnel making proper use of PPE? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Are neutralising chemicals readily accessible for spill control | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Evaporator Anti-Scale Dosing | | Aquamax | |
|------------------------------|---|--------------------------|--------------------------|
| | | Yes | No |
| 1. | Is container properly labelled? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Are the appropriate warning and instruction signs in place? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Are IBC's placed above secondary containment? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Is the container healthy? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Are all covers in place? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Is the "in use" IBC supply tap leaky? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Is the drip tray properly placed beneath tap? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Is the bund empty and clean? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Is there any evidence of leak from bunds or drains? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Is the latest version of SDS accessible? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Is the chemical transferring container healthy and safe? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Are there any leaks on dosing pumps and piping? | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Is spill clean-up material and equipment available? | <input type="checkbox"/> | <input type="checkbox"/> |

Engineer's Signature: _____

Date: _____



Annex 8

Template 23.7 - SDS Checklist

Template 23.7 – SDS Checklist DPS

The following checks are to be carried out every 6 months. Once checks are performed the original copy is to be forwarded to the Head of Health and Safety. The Head of Health and Safety is to forward a copy to the station manger and is to retain a copy for operational reference.

| Point (according to drawing DPS/XZ/92) | Location | SDS sheets in place | |
|--|-------------------------|--------------------------|--------------------------|
| | | Yes | No |
| 1 | Security Guard Room | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | Clinic | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | Operations Eng. Phase 1 | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | Maintenance workshop | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | Chemical Store | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | Chemical Store | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 | Oil Store | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 | Oil Store | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 | Demineralisation plant | <input type="checkbox"/> | <input type="checkbox"/> |
| 10 | Phase 2B | <input type="checkbox"/> | <input type="checkbox"/> |
| 11 | Phase 1 | <input type="checkbox"/> | <input type="checkbox"/> |
| 12 | Chlorination Plant | <input type="checkbox"/> | <input type="checkbox"/> |
| 13 | Fuel Oil pump house | <input type="checkbox"/> | <input type="checkbox"/> |

Other Comments:

Health and Safety Officers

Date