

# Environmental Instruction

## Handling and Storage of Chemicals

### (EI-08)

**Date : 01 – 01 – 2006**

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**1.0 Purpose**

This environmental instruction outlines the practices to be adopted for the handling and storage of chemicals (including radioactive substances and irradiating apparatus) and dangerous goods (DG) to minimise the risks of spillage / leakage and to comply with legal and other requirements.

**2.0 Scope**

This instruction is applicable to the site activities which requires the handling and storage of chemicals and dangerous goods. The issues covered in this technical instruction are categorised into:

- Containers;
- Handling and Spill Prevention;
- Information and Labelling;
- Inspection and Maintenance; and
- Storage and Transportation.

Some of the chemicals used in the factory include acids, alkaline, adhesives, organic solvents and other chlorine containing chemicals, etc.

Procedures for management of chemical waste are given in the EI-03 Waste Management.

**3.0 Procedure****3.1 Application for permits / licences**

- 3.1.1 The EMR shall determine if DG stored will exceed the exempted quantity, and if so, arrange the appropriate storage facility(s) and obtain licence from the respective authority.

**3.2 Best Practices for Handling and Storage of Chemicals and DG**

The Production Manager shall ensure that the following practices are properly adopted.

**3.2.1 Information and Labelling**

- Each function / department shall prepare and maintain a list of chemicals (EF-EI08-01) and their information sheet (EF-EI08-02) used in their departments and detailed the nature and relevant emergency procedures of each chemical.
- Obtain details for the handling, storage and control of impurities and spills from supplier or manufacturer.
- Obtain details of the chemical composition of the substances, and correct treatment with eyes, skin, ingestion, etc from the supplier or manufacturer (usually available in a MSDS)
- Ensure that the information is up to date, provided to the relevant staff, and easily accessible in case of emergency in accordance to the facility safety plan

### 3.2.2 Competence and Training

- Chemical goods storage shall be managed by two storekeepers. The storekeepers are required to attend and pass the training on nature of chemicals, emergency preparedness, etc..
- Before performing the job duty, training related to chemicals shall be provided to supervisors of Production Department, Store Manager, and technicians who are required to use chemicals on their daily operation activities. The training shall include the following information:
  - How to use the chemical (e.g. MSDS, special attention, work instruction, etc.)
  - Relevant documents on chemical and waste management
  - Function / department requirements
  - Personal protection equipments available

### 3.2.3 Containers

- Use containers designed to minimise spills.
- Ensure that containers used are appropriate to the substances contained (e.g. do not react with the substance, resistant to corrosions)
- Ensure that containers are maintained in good conditions and securely closed
- Label all containers with appropriate labels (in Chinese and English) (refer to "Labelling and Classification of Dangerous Substances Commonly used in Industry")

### 3.2.4 Bulk Storage and Transportation

- Special protection measures shall be taken during the transportation of chemicals that are flammable, explosive and/or hazardous to human
- Protective measures shall be taken for chemicals that are easily spilled.
- When transporting the chemicals, shall read the instruction on the containers, load carefully.
- Provide separate storage facilities for different substances to prevent dangerous chemical reaction and contamination
- Locate secondary containment store as far away as possible from environmentally sensitive areas such as drains.
- Store goods away from heavily trafficked areas to avoid container damage
- In each storage area:
  - ✓ Ensure that only the substance(s) specified are stored
  - ✓ Provide secondary containment or drip trays, and impermeable floor and bunding
  - ✓ Prevent unauthorised access by providing locks to the storage areas.

- ✓ Provide clear signage (e.g. DG category, type of substances, "No smoking" signs).
- ✓ Ensure adequate ventilation, and fire fighting facilities.
- ✓ Provide labelled shelving for smaller chemicals.
- ✓ During transportation keep all containers upright (and chained for DG)

### *3.2.5 Handling and Spill Prevention*

- Use pump dispensers for removal of chemicals from drums and containers
- For handling of chemicals, use equipment and piping only for their designated purposes
- Ensure accurate weighing, dispensing and mixing of chemicals
- Ensure mixing areas are well lit and ventilated, and are as close to their point of use as possible
- Use trays to contain spills from transferring of substances (e.g. from one container to another).
- Follow the safety instructions provided by the EMR / Production Manager and chemical label
- Where required, use the protective clothing provided and deposit after use
- Do not smoke, eat or drink in any place where chemical substances are stored or used
- Report any sign of ill health to the Production Manager and inform him / her of substances used
- Treat all chemicals substances with care. If in doubt, ask the Production Manager / EMR.

### *3.2.6 Cleaning up minor spills*

- Use sand, saw dust, or spill kit to absorb the spill and prevent it from spreading.
- Dispose of the contaminated absorbent material as chemical waste in accordance to EI for Waste Management.
- Ensure that saw dust, spill kits, etc are readily accessible and of enough quantity.

### *3.2.7 Inspection and Maintenance*

- Periodically inspect, and where necessary test, the condition of storage drums, tanks and pipelines (especially flanges and gaskets)
- Inspect and maintain all plant and equipment to prevent leakage of chemicals / fuel.

## **4.0 Monitoring and Checking**

The EMR shall ensure that:

- storage facilities are operated and maintained in satisfactory conditions;

- practices specified in this EI are followed by staff and contractors;
- the requirements specified in each DG licence (including category of DG stored and the capacity of the storage facility) are complied with; and
- the quantities of non-licensed DG stored do not exceed the exempted quantities.

The Production Manager or his / her delegate shall:

- undertake weekly walk through surveys to provide a visual inspection of the effectiveness of the control procedures for the handling and storage of chemicals and DG.
- where nonconformity are identified corrective action measures are defined and implemented in accordance with EP-07 Enquiry / Complaint / Nonconformity Handling.

## 5.0 Records

Record Description	Record Location/ Retention Responsibility	Minimum Retention Time
Lists of chemicals and DGs, including quantities and locations (Appendix 1)	EMR	3 years
Chemical Information (EF-EI08-02)	EMR / Production Manager	3 years
MSDS for all chemicals and DGs (Reference to supplier's information)	EMR	3 years
Visual Inspection Records (Refer to EF-EP07-01 if found any nonconformity item)	Production Manager	3 years

## 6.0 Appendix

Appendix 1 – List of Chemicals (EF-EI08-01)

Appendix 2 –Chemical Information (EF-EI08-02)

Function / Department

Prepared by:

No.	Chemical Name	MFR <sup>1</sup>	Standard / Model	Hazardous	MSDS Yes / No?	Special Instruction	Protection Equipment	Emergency Equipment	Work Instruction	Remark
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										
13.										
14.										
15.										
16.										
17.										
18.										

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<sup>1</sup> MFR - Manufacturer

<b>(Chemical Name)</b>	<b>Prepared by</b>	<b>Reviewed by</b>	<b>Approved by</b>
<b>1. Product and Company Identification</b> <ul style="list-style-type: none"> <li>(Product Name)</li> <li>(Manufacturer Name / Contact Info)</li> </ul>			
<b>2. Item Description</b> <ul style="list-style-type: none"> <li>(Colour, odour, flammable, explosive, toxic, hazardous)</li> <li>(Major usage of this chemical)</li> </ul>			
<b>3. Environmental Impacts</b> <ul style="list-style-type: none"> <li>(Air, ozone layer, water, land, waste handling, flora and fauna, human)</li> </ul>			
<b>4. Handling Precautions</b> <ul style="list-style-type: none"> <li>(What kind equipments shall be used for this chemical)</li> <li>(Any restrictions on the environment, area of using this chemical)</li> <li>(Any safety measures required after usage)</li> <li>(Any special conditions for permanent / temporary storage)</li> </ul>			
<b>5. Disposal Precautions</b> <ul style="list-style-type: none"> <li>(How should it be disposed of?)</li> <li>(Where should it be disposed of?)</li> <li>(Shall any specific personnel handle the disposal?)</li> <li>(Any other instructions refer to?)</li> </ul>			
<b>6. Emergency Procedure</b> <ul style="list-style-type: none"> <li>(What action shall be taken if minor spillage on human / working area?)</li> <li>(What action shall be taken if inhale / drink?)</li> <li>(Any other instructions / MSDS refer to?)</li> </ul>			
<b>7. Fire Precautions</b> <ul style="list-style-type: none"> <li>Contact Fire Services Department and Company's Emergency Team</li> <li>(What kind of fire extinguish equipment shall be use in case of fire?)</li> <li>(Any other instructions shall be referred to?)</li> </ul>			
<b>Revision History</b>			
<b>Revision Date</b>	<b>Description</b>	<b>Revised By</b>	<b>Approved By</b>