



Mehr Petrochemical Co.

MHPC

Environmental Performance

National Iranian Petrochemical Co. (NPC)

13-Jun-2015

*Prepared by: M. Azizi
Environmental Engineer, M.Sc.*

1

Agenda

- The Introduction of MHPC
- CX Process Characteristics
- HSE Key Performance Indicators
- Environmental Performance Report
- Spill KPI Description
- Sample Incident Reporting
- Full Scale Drill
- Acid Tank Accident
- Meeting & Committees related to HSE Issues

2

The Introduction of MHPC

- **Finance:**

A. 60 % Alliance Petrochemical Investment, Singapore (38 % SCG Chemical, Thailand – 22 % Itochu, Japan)

B. 40 % International Petrochemical Company (NPCI, Iran)

- **HDPE Production :** (300,000 ton/year)

- **Feed (s):** Ethylene, Butene-1

- **Combustion Units:** N/A

- **Stack/Exhaust:** N/A

- **Flare:** Low pressure, Smokeless, Air Assisted, Auto Pilot Flame

- **IR-CX Process**
(Clean & Excellent Process)



3

CX Process Characteristics, Mitsui (Japan)

Process Advantages:

1) Stable & Simple Operation:

- Super-high-activity catalyst
- Low pressure & moderate temperature polymerization
- Easy and precise control of reactor conditions without changing catalyst system
- Automatic start-up and product quality control system



2) Low Running Cost:

- Sophisticated reactor heat-removal system
- One-train pelletizer system
- High-rate direct solvent recycling system



3) Safe and Environmentally Friendly Process:

- Closed system
- Sophisticated interlocking system
- Very low inventory of ethylene in reactor system
- Very low volume of wastewater and no contamination by hazardous materials



4

HSE Key Performance Indicators

No	KPI	KPI Description	Actual (YTD)	Acptc. level	Target
1	IFR (Injury Frequency Rate)	$\frac{\text{No. of reportable case accidents} \times 200,000}{\text{Total man Hour worked}}$	0	0.33	0.15
2	Spill	Number of Chemical Spill Incident	0	1	0
3	Process Safety	Number of Fire, Explosion and Chemical reactions cases in ISBL	0	1	0
4	Motor Vehicle Accident (MVA)	$\text{MVA frequency rate} = \frac{\text{number of incident case} \times 1 \text{ million kilometers}}{\text{actual mile driven (kilometers)}}$	0	1	0
5	Distribution	$\text{Distribution frequency rate} = \frac{\text{number of reportable case} \times 10,000 \text{ shipment}}{\text{total shipment}}$	0	1	0
6	Regulatory Compliance	Number of nonconformity , Non-compliance of the regulation or receiving of government notice.	0	1	0
7	Fire Accident In Non Restrict Area	number of fire in OSBL area	0	1	0


Environmental Performance Report

No.	Process	KPI/PI	KPI Description	Target
1	Environment	Number of chemical spills	The quantity of spill happens per year	0/year
2		No. of Waste water parameter not in specified range	Continues Oily Contaminated (COC) Quality measurement	0
3		Environmental Parameter monitoring	In accordance to environmental standards (No. Impact to Air, Water, Ground Environment according to monitoring report)	0

Spill KPI Description				
No.	KPI	KPI Description	Actual (End of DEY)	Target
1	Spill	Number of Chemical Spill Incident	...	0

Environmental incident	
Category I	Serious incident result in DAWC or Fatality for Employee or contractor or community evacuation or property damage <i>or product loss or flammable chemical release grater than 2.5 ton</i>
Category II	Exposure resulting in first aid treatment to Employee or contractor or information to alert community or property damage <i>or product loss or draw media attention or chemical/ excluding plastic resins release grater than 500 kg.</i>
Category III	<i>Loss of primary containment of chemical grater than 50 kg (500 kg plastic resins)</i>

7

Sample Incident Reporting	
Incident Case : Environmental Incident (Lube oil spillage) Date : August 17, 2010 (1389.05.26)/ Place : Extruder lube oil unit at Pelletizing House	
Event : MT team removed the inserted temporary mesh out of the 16" discharge pipe. They could not insert the gasket in between, so that it was needed to loosen the other end flange bolts connecting to the bottom elbow of lube tank. It was time consuming to drain oil inside the tank again so, they loosened the other end flange bolts and let the oil spill around.	
Root Causes : <ul style="list-style-type: none"> - No awareness of the oil spill (Potential of accident) - Work under pressure 	
Corrective Action : <ol style="list-style-type: none"> 1. Provide safety training to improve their awareness 2. Provide more supervision 	

Full Scale Drill

(Fire, Safety, Environment, Urgencies)

Date of Conduction: *22-Dec-2014*

Location: *U-700 (Distillation)*

Scenario:

- *Hexane leakage at an earthquake*
- *Fire and explosion in Tank Yard area*
- *Acid Tank Rupture due to heat of fire*
- *Pouring Acid on the ground*
- *Acid neutralization and decontamination*

Drill Objectives:

- *Communication improvement*
- *Fire team coordination and responding exercise*
- *Secondary affect of fire and explosion (Acid tank rupture)*
- *Environmental condition control in emergencies*

9

Acid Tank Accident

Date of Accident: *12-Apr-2015*

Location: *U-700 (Distillation)*

Type of Accident: *Chemical Spill*

Description:

- *Failure of PE pipe connection due to improper thread up*
- *Acid fumes spread in the environment*
- *Tank drain valve was not closing due to jammed*
- *Pouring about 2216 kg HCl into the chamber that was built earlier.*
- *Neutralize the HCl by the Lime and containment facilities (Sand Bags).*

Root Causes:

- *Using connection with improper material*
- *Lorry's equipment Unsafe condition and absence of any certificate that confirm the lorry's operation condition.*



10

Meeting & Committees related to HSE Issues

- 1. Daily Meeting**
- 2. Monthly Meeting**
- 3. HSE Committee Meeting**
- 4. HSE Sub-committee Meeting**
- 5. Energy Committee**
- 6. Reliability Committee**
- 7. Suggestion Committee**
- 8. 5s Committee**
- 9. MOC Committee**
- 10. Other meeting & committees that HSE invites as a guest to comment on subjects.**

Thanks for your attention

