

Shilpa Pharma Lifesciences Limited, Unit 2
Plot No: 33, 33A & 40-47, Raichur Industrial Growth Centre, Chicksugur 584134, Raichur, Karnataka, India
EIA for AO-AO-7 Block

Sr No	Activity	Description of Aspects	Consequence (Worst Case)	Base Impact			Existing Impact Control Measures	Residual Impact			Additional Impact Control Measures
				S	L	Rating		S	L	Rating	
1	Raw materials Handling (Liquids ,Solids Semi solids Acids,Base,Pyrophoric,Hygorscopic Chemicals	Environment pollution Hazardous waste generation	Legal Non compliance, Natural resources depilation Work place environment pollution Natural Resource conservation	3	2	Medium	1) Materials handling in double packing with secondary containment and With pallets 2) Following safe spill control and safe hazardous and Non hazardous waste disposal methods	2	1	Low	1) Check periodically existing controls and practices 1) Effective training to be provided. 2) Work area monitoring and VOC
2	Processing Raw materials and ingredients as per required for product process flow at production blocks	Environment pollution Hazardous waste generation	Legal Non compliance, Natural resources depilation Work place environment pollution	3	3	Medium	1) Materials handling in double packing with secondary containment and With pallets 2) Following spill controls and Hazardous waste safe disposal procedure 3) Following Consent for operation mention conditions to comply Legal requirements 4) Following safe decontamination & detoxification methods to avoid environment pollution 5) Monitoring ambient air quality parameters to measure environment pollution all parameters are with in limit as prescribed in Consent for operation 6) Online VOC monitoring system available to monitor continuous air quality 7) Following safe effluent collection and treatment system having zero liquid discharge facility to avoid environment pollution 8) Periodical ground water& soil sample, Treated and Raw effluent analysis done by MOEF authorized laboratories all reports are with in standard limits 9) Air pollution control system like scrubbers available to control figurative emissions 10) AHU Filters are available to avoid dust contamination & AHU Filters are disposing after detoxification and cleaning 11) Using natural green energy to reduce carbon emissions.	2	1	Low	1) Work area monitoring and VOC
3	Sample collection & submission of Sample to qc for analysis purpose	Environment pollution Hazardous waste generation	Legal Non compliance, Natural resources depilation Work place environment pollution	2	3	Low	1) Collecting sample bottles to avoid spill and exposure 2) sampling bottles are disposing after cleaning and decontamination	2	1	Low	Effective training to be provided 1) Work area monitoring and VOC
4	Packing of final product	Environment pollution Hazardous waste generation	Legal Non compliance, Natural resources depilation Work place environment pollution	3	2	Medium	1) Trained operators are operating systems with operating procedures 2) Minimsing waste spillage during package 3) Using containment equipment's like Isolators and Clean room system with proper air pollution control system like scrubber to avoid environment pollution	2	1	Low	Periodically required evaluate existing controls
5	production equipment's Cleaning	Environment pollution Hazardous waste generation Usage of Natural Resources Usage of electrical Power	Legal Non compliance, Natural resources depilation Work place environment pollution	3	3	Medium	1) Trained operators are handling system cleaning 2) Using appropriate solutions to clean systems 3) Taking measures to avoid spillage ,If spill materials will clean by using spill control kit 4) Spill cleaned materials hand over to Environment department for safe disposal	2	1	Low	Periodically required evaluate existing controls
6	Collection packing storage & disposal of Hazardous waste & Non hazardous materials safely	Environment pollution Hazardous waste generation Usage of Natural Resources Usage of electrical Power	Legal Non compliance, Natural resources depilation Work place environment pollution	4	4	High	a) After proper treatment hazardous waste disposed by Environment department as per Consent for operation conditions b) Employees using proper PPE While handling operations c) Dedicated safe storage facility available to Hazardous waste storage	4	2	Medium	Periodically required evaluate existing controls Scope for E-waste management Implementation for E waste Scope of implement biomedical waste management

Prepared By Name: K. Ananda (Dy. Manager) Sign: <i>[Signature]</i> 25/05/23	Checked By Name: Lokeswara Duthala (Sr. Manager) Sign: <i>[Signature]</i> 25/05/23	Approved By Name: R Elangovan (DGM-EHS) Sign: <i>[Signature]</i> 25/05/23
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Shilpa Pharma Lifesciences Limited, Unit 2											
Plot No: 33, 33A & 40-47, Raichur Industrial Growth Centre, Chicksugur 584134, Raichur, Karnataka, India											
HIRA for Production Department AO-A07-- Block											
Sr No	Activity	Description of Hazard	Consequence (Worst Case)	Base Risk			Existing Risk Control Measures	Residual Risk			Additional Risk Control Measures
				S-1	L-1	Rating		S	L	Rating	
1	Raw material receipt from warehouse to block, (Solid RM, liquid ,solvents)	Spillage Exposure Fire	Slip trip fall injuries Facility loss Product loss Occupational Injuries	3	3	Medium	Spill kit available to control spill SCBA available for control of Toxic gases control Forklift is used for transfer of solid, liquid and solvent. Fire hydrant and Fire extinguishers available to control fire Fire balls available to control fire	3	1	Low	1. Effective Training to be provided. 2. Fire detection, alarm system 3. Work area monitoring and VOC and LEL
2	RMs shift to shop floor	Spillage Exposure Fire	Slip trip fall injuries Facility loss Product loss Occupational Injuries	4	3	High	Shifting materials with proper secondary protection & proper packing Two employs are using to lift or shift materials from one place to other place Always keeping house keeping good condition barricading area and use spill control kit to collect spill Sufficient illumination available to avoid slip trip fall Employees using activity related Personal protective equipment to avoid exposure hazard Dedicated storage facility available at diffent mateials at diffent location with adequate safety measures	4	1	Medium	1. Effective Training to be provided. 2. Fire detection, alarm system 3. Work area monitoring.
3	Charging solid & liquid material	Spillage Exposure Static fire Hazard	Slip trip fall injuries Facility loss Product loss Occupational Injuries	3	3	Medium	while handling solids proper earthing and bonding is ensured using SS Scoops to control static charges PPE like mask & gloves are used. Effective fire extinguishers are available Emergency exit available Spill control kit available to control spill Dedicated eye wash & body wash shower available Eye wash bottles available for eye spill cleaning Fire hydrant system available to control fire Fire balls available to control fire Spot Exhauster system available Dedicated Occupational health facility available Periodically checking earth pit resistance and earthing bonding continuity Block wise earthing bonding continuity testing system available Contentious nitrogen blanketing maintaining	3	1	Low	1. Effective Training to be provided. 2. Fire detection, alarm system 3. Work area monitoring and VOC and LEL
4	Charging fo liquid RM	Spillage Exposure Static fire Hazard	Slip trip fall injuries Facility loss Product loss Occupational injuries	4	1	Medium	To monitor pressure dedicated pressure gauge are available Vent is keeping open condition to avoid pressure build up in system Temperature indicator available to control temperature Based on temperature of reaction mass steam or hot water circulation control by Shift chemist & shift in charge will monitor periodically Using proper equipment with proper pressure control system & Nitrogen for filtration purpose Doing leakage test before start unit operation to avoid spill and leakage Periodical preventive maintenance available to ensure pressure gauges and Temp sensor working and control valves working properly Fire extinguisher and Fire hydrant ,Fire balls available to control fire Spill control system available to control spill	3	1	Low	1. Effective Training to be provided. 2. Fire detection, alarm system 3. Work area monitoring and VOC and LEL

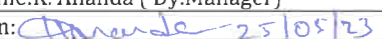
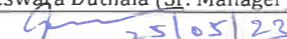

5	Charging of solvents	Spillage Exposure Static fire Hazard	Slip trip fall injuries Facility loss Product loss Occupational injuries	4	3	High	To monitor pressure dedicated pressure gauge are available Vent is keeping open condition to avoid pressure build up in system Temperature indicator available to control temperature Based on temperature of reaction mass steam or hot water circulation control by Shift chemist & shift in charge will monitor periodically Using proper equipment with proper pressure control system & Nitrogen for filtration purpose Doing leakage test before start unit operation to avoid spill and leakage Periodical preventive maintenance available to ensure pressure gauges and Temp sensor working and control valves working properly Fire extinguisher and Fire hydrant ,Fire balls available to control fire Spill control system available to control spill Earthing bonding continuation available	4	1	Medium	1. Fire detection, alarm system 2. Work area monitoring and VOC and LEL
6	Handling gases & Gas purging to Reaction mass	Spillage Exposure Static fire Hazard Explosion	Facility loss Product loss Business continuity Interruptions Occupational injuries	3	3	Medium	Dedicated gas cylinder storage facility available at site Regular using plant Nitrogen for blanketing If required using Nitrogen gas cylinder for blanketing based on product sensitivity Gas cylinder manifold ,pressure gauges, gas regulators available to handle gas flow During gas purging contentiously monitoring gas flow and pressure by shift chemist till completion of activity	2	1	Low	1. Effective Training to be provided.
7	Dispensing of Liquid RM	Spillage Exposure Static fire Hazard	Slip trip fall injuries Facility loss Product loss Occupational injuries	3	3	Medium	To monitor pressure dedicated pressure gauge are available Vent is keeping open condition to avoid pressure build up in system Temperature indicator available to control temperature Based on temperature of reaction mass steam or hot water circulation control by Shift chemist & shift in charge will monitor periodically Using proper equipment with proper pressure control system & Nitrogen for filtration purpose Doing leakage test before start unit operation to avoid spill and leakage Periodical preventive maintenance available to ensure pressure gauges and Temp sensor working and control valves working properly Fire extinguisher and Fire hydrant ,Fire balls available to control fire Spill control system available to control spill	3	1	Low	Periodically Required to check existing controls and practices Scope to have flow control for solvents pumping from day tank to Reactors & ware house to reactor Reactor solvent dispensing pipe required to extend up to reactor walls to avoid static discharge (J pipe or Dipleg)
8	Charging & Addition of Acidic RMs	Spillage Exposure Corrosion of Equipment's	Slip trip fall injuries Facility loss Product loss Occupational injuries	3	3	Medium	Using work dedicated personal protective equipment's to control occupation Hazards Trained employees handling to safe activity completion Facility compatibility and facility selection process ensure safety of materials and equipment ,facility compatibility Online Air breathing system available Dedicated scrubbing system & exhausting system available to control fumes	3	1	Low	1) Separte plat form to be develop up to manhole to check total tank condition
9	Temperature rising and Maintaining of reaction mass after Acidic liquid RMs addition& maintain production process	Exposure Fire Occupational exposure	Slip trip fall injuries Facility loss Product loss Occupational injuries	3	3	Medium	controlled addition doing based on Reaction mass temperature Dedicated pressure gauges & temperature sensor available to monitor pressure and temperature Trained chemist monitoring system contentiouslyand periodically noting parameters in BPR , Chemist will take control measures if found excess process parameter Condenser vent kept open to atmosphere contentiously to avoid pressure build up in system Dedicated scrubber and spot exhaust system available control fumes	3	1	Low	

10	Reaction mass in process sample collection at -30 & at 210 °c	Spillage Exposure Corrosion of Equipment's Fire	Slip trip fall injuries Facility loss Product loss Occupational injuries Business continuation issues	2	3	Low	Sample collection by using sample collection Rad Spot exhauster system available to control fumes during sample collection Employees using activity bases personal protective equipment's Activity handle by trained employees Spill control kit available to control spill Fire extinguisher & Fire hydrant and fire balls available to control fire Sample collection from reaction mass storage tanks , Sample collection port available No sampling for hydrogenation reactions	2	1	Low	
11	Quenching of Reaction mass	Spillage Exposure Corrosion of Equipment's Fire	Slip trip fall injuries Facility loss Product loss Occupational injuries Business continuation issues	3	2	Medium	Preparing quenching mass in safe method & preparing based on R&D Provided data Controlled addition to control mass temperature and pressure Based on process product mass adding to quenching mass to avoid incidents and accidents Sufficient Colling system and condensing system available Dedicated temperature and pressure gauges available to monitor process parameters	3	1	Low	1)All water media chemicals are using no major hazard for quenching 2)Required to review in HAZOP Study .
12	Layer separation	Spillage Exposure Corrosion of Equipment's Static Fire	Slip trip fall injuries Facility loss Product loss Occupational injuries	4	3	High	Collecting in cleaned layer separation tank Control valves available to control flow of reaction mass Activity carried out by trained employees Level indicators available to monitor level of Separation tank Leakage checking before start operation	4	1	Medium	1. Effective Training to be provided. 2. Fire detection, alarm system
13	Distillation	Spillage Exposure Corrosion of Equipment's Static Fire	Slip trip fall injuries Facility loss Product loss Occupational injuries	4	3	High	Nitrogen blanketing & Temperature and pressure gauges available to monitor process parameters Dedicated distillation collection tank available Utilities available to control reaction mass temperature and condensation	4	1	Medium	1. Fire detection, alarm system 2. Work area monitoring and VOC and LEL
14	Strip outs	Spillage Exposure Corrosion of Equipment's Static Fire	Slip trip fall injuries Facility loss Product loss Occupational injuries	3	3	Medium	Nitrogen blanketing & Temperature and pressure gauges available to monitor process parameters Dedicated distillation collection tank available Utilities available to control reaction mass temperature and condensation	3	1	Low	NA
15	Degassing	Spillage Exposure Corrosion of Equipment's	Facility loss Product loss Occupational injuries	3	3	Medium	Maintain sufficient safe place reactor to carried out reaction and accommodate gas generated during production process Dedicated scrubbing system available to control gas generated during reaction Vents kept open condition to avoid gas accumulation during reaction	3	1	Low	1) Scope to have production block in side vents to be connected to scrubber followed by carbon absorption bed
16	After degassing, Solvent charging for Isolation and reactor starting	Spillage Exposure Static Fire	Facility loss Product loss Occupational injuries	3	3	Medium	1) Earthing bonding continuation & checking system available 2) Nitrogen blanketing available to avoid fire incident 3)Control addition method following to control reaction mass process parameters	2	1	Low	
17	Before centrifugation, distillation reactor bottom Chock removal under abnormal conditions	Spillage Exposure Static Fire	Facility loss Product loss Occupational injuries	3	3	Medium	1) Using vacuum or Nitrogen pressure to remove Chock materials	2	1	Low	
18	Mass feeding into Centrifugation (Heavy crystalline material and fine material)	Static fire Spillage	Product loss Occupational injuries	3	3	Medium	1)Using control valves to control flow 2) Using vacuum or Nitrogen pressure to remove Chock materials 3) Using sufficient dia of pipe line to avoid flow of Product 4) Maintain sufficient nitrogen pressure to avoid product Chock	2	1	Low	
19	Centrifuge bag lifting through lodder	Spillage Exposure Static Fire	Facility loss Product loss Occupational injuries Fire	3	3	Medium	1)Using proper load baring lifting equipment which is controlled by operators 2) Using proper hooks to control load to avoid material fall incident 3) Activity Operating by trained employees 5) Periodical preventive maintenance schedule available control equipment abnormal function	2	1	Low	

20	Wet lumps breaking	Spillage Exposure Static Fire	Product loss Occupational injuries Fire	3	3	Medium	1) Employees using activity based personal protective equipment's 2) Activity performing by trained employees 3) Sufficient ventilation and lighting available to perform activity safely 4) Spill control kit and fire hydrant and fire extinguisher and fire balls available to control fire & spill	3	1	Low	1) Scope to check periodically existing controls
21	Wet material loading to drying systems	Spillage Exposure Static Fire	Facility loss Product loss Occupational injuries Fire	3	2	Medium	1)Using proper equipment to shift and load material sin to drying system by trained operator with adequate personal protective equipment's 2)Keeping equipment clean and drying properly before loading in to system 3) Following nitrogen blanketing	3	1	Low	1) Scope to check periodically existing controls
22	Drying of wet material	Spillage Exposure Static Fire	Fire Product loss Occupational injuries Fire	4	2	Medium	1) Temperature sensor and interlock between hot water circulation and temp sensor available to control temperature 2)Employees handle activity by using activity based personal protective equipment's 3)Fire hydrant and Fire extinguisher and Fire balls available to control fire 3) Nitrogen blanketing using to crack vacuum& during removing materials	3	1	Low	1) Effective training to be provided. 2)Required to review in HAZOP Study.
23	Unloading the dried material	Fire due to unloading into Poly bags and static	Fire Product loss Occupational injuries Fire	4	2	Medium	1) Product hazard based personal protective equipment using 2)Unloading material after reaching ambient temperature 3)unloading started after Vacuum releasing with nitrogen	3	1	Low	1) periodically required to check existing practices and Controls effectiveness
24	Milling the semi & Final dried material	Spillage Exposure Static Fire	Fire Product loss Occupational injuries Fire Business continuation issues	3	2	Medium	1) Contentious earthing bonding system available to control static energy 2) Fire balls and fire extinguishers ,Fire hydrant system available to control fire	2	1	Low	
25	Neutralization and collection and packing of Hazardous waste material and Spent MLS	Spillage Exposure Static Fire	Fire Product loss Occupational injuries Fire	3	2	Medium	1)Collecting Hazardous waste in compatible packing materials with adequate personal protective equipment by trained employees 2) Monitoring activity by chemist contentiously 3) Spot exhaust system available to controls fumes 4) AHU System available to maintain clean air at work place 5) Dedicated hazardous waste storage facility available ,Faculty maintained by dedicated environment team round the clock	2	1	Low	1) periodically required to check existing practices and Controls effectiveness
26	Reactors Cleaning& Confined vessel entry and work at Height	Spillage Exposure Static Fire	Fire Product loss Occupational injuries Fire	3	3	Medium	1) Following work permit system and lock out and tag out system for safe cleaning of Reactors 2)Employees handle activity by using activity based personal protective equipment's 3) Activity monitoring by supervisor contentiously and safety team till completion of work 4) Using Safety belts and Checking work place LEL ,O2 level and H2S Levels allowed employees after proper oxygen levels at work place	3	1	Low	1) Scope to have Tripod to manage emergency evacuation from Reactor 2) periodically required to check existing practices and Controls effectiveness
27	Addition tanks cleaning Transfer line cleaning Centrifuge cleaning	Spillage Exposure Static Fire Fall incident	Fire Product loss Occupational injuries Fire	4	2	Medium	1) Employees using activity based personal protective equipment's 2) Activity performing by trained employees 3) cleaning solution collecting in close loop 4) Spill control kit available to control spill 5) Fire extinguisher ,Fire hydrant and fire balls available to control fire	3	1	Low	1) periodically required to check existing practices and Controls effectiveness
28	Miller& pulverizer equipment handling&PCO cleaning	Spillage Exposure Static Fire Fall incident	Spillage Exposure Static Fire Fall incident	3	3	Medium	1) Employees using activity based personal protective equipment's 2) Activity performing by trained employees 3) cleaning solution collecting in close loop 4) Spill control kit available to control spill 5) Fire extinguisher ,Fire hydrant and fire balls available to control fire	2	1	Low	1) periodically required to check existing practices and Controls effectiveness

29	Product containers cleaning	Spillage Exposure Static Fire Fall incident	Spillage Exposure Static Fire Fall incident	2	2	Medium	1) Employees using activity based personal protective equipment's 2) Activity performing by trained employees 3) cleaning solution collecting in close loop 4) Spill control kit available to control spill 5) Fire extinguisher ,Fire hydrant and fire balls available to control fire	3	1	Low	
30	Product used Filters cleaning	Spillage Exposure Static Fire Fall incident	Spillage Exposure Static Fire Fall incident	3	3	Medium	1) Employees using activity based personal protective equipment's 2) Activity performing by trained employees 3) cleaning solution collecting in close loop 4) Spill control kit available to control spill 5) Fire extinguisher ,Fire hydrant and fire balls available to control fire	2	1	Low	
31	Pharma material used poly bag cleaning	Spillage Exposure Static Fire Fall incident	Spillage Exposure Static Fire Fall incident	4	2	Medium	1) Employees using activity based personal protective equipment's 2) Activity performing by trained employees 3) cleaning solution collecting in close loop 4) Spill control kit available to control spill 5) Fire extinguisher ,Fire hydrant and fire balls available to control fire	3	1	Low	
32	Reactor refluxed solvent unloading and transfer to yard	Spillage Exposure Static Fire Fall incident	Spillage Exposure Static Fire Fall incident	3	3	Medium	1) Using close loop and compatible drums to unloading spent mls 2) Transfer safely to Environment department for safe disposal	2	1	Low	
33	Utility breakdown during reaction Distillation	Spillage Exposure Fire	Spillage Exposure Occupational Injury Facility loss Business continuity Issues	4	3	Medium	1) Pressure gauges And Temperature gauges available to monitor utility supply to production blocks 2) Monitoring Process parameters contentiously by chemist and shift in charges if any abnormality found in process parameters will take adequate action Immediately 3) Utility preventive maintainece schedule available to prevent break down 4) Control additions system following based on process parameters	3	1	Low	1) periodically required to check existing practices and Controls effectiveness 2) Utility breakdown alarams required.
34	Reactor abnormal sound observing form inside the reactor during process	Spillage Exposure Fire	Spillage Exposure Occupational Injury Facility loss Business continuity Issues	3	2	Medium	1) Periodical preventive maintenance schedule available 2) Using standard equipment's to avid sudden shutdown 3) Alternative equipment available to transfer materials if Shut down existing equipment	2	1	Low	1) Scope to have Product process safety data.
35	Centrifuge Handling	Spillage Exposure Fire	Spillage Exposure Occupational Injury Facility loss Business continuity Issues	3	3	Medium	1) Product hazard based personal protective equipment using 2) Available Up dated Material safety data sheets 3) R&D team & Technology Transfer team monitoring batch initiation process along with Production team 4)facility selection criteria following for safe batch execution 5) Following product base detoxification methods to detoxify waste 6)R&D development base product process parameters are following thorough BPR 7) Electrical controls lik MCB & ELCB system availbale to control excess load on system due to abnormality. 8) Interlock system is available.	4	1	Low	1) Scope to have Product process safety analysis data and facility selection base on toxicology data 2)Periodical employees health check up on based product toxicology 3) Found using hydraulic system to open centrifuge parts for cleaning and Bag loading scop to have standard seconday guard as secondary protection to avoid fall incident on employees in case of Pneumatic system failure
36	Handling ANFD	Spillage Exposure Fire	Spillage Exposure Occupational Injury Facility loss Business continuity Issues	4	2	Medium	1) Dedicated Facility available to handle System 2) Equipment handling by using all required personal protective equipments 3)All trained operators handling equipment safely 4) Interlock system is available.	3	1	Low	1)Existing safety control monitoring required periodically
37	Handling PNFD	Spillage Exposure Fire	Spillage Exposure Occupational Injury	4	2	Medium	1) Following safe procedure for handling and dispsol 2) Employee using activity based perosnal protective equipments	3	1	Low	1)Existing safety control monitoring required periodically

38	Handling Pulvarizer	Spillage Exposure Fire	Spillage Exposure Occupational Injury	3	3	Medium	1) Following safe procedure for handling and dispsol 2) Employee using activity based perosnal protective equipments	3	1	Low	1)Existing safety control monitoring required periodically
39	Handling Sifter	Spillage Exposure Fire	Spillage Exposure Occupational Injury	3	2	Medium	1) Following safe procedure for handling and dispsol 2) Employee using activity based perosnal protective equipments	2	1	Low	1)Existing safety control monitoring required periodically
40	Handling Biopolar system	Spillage Exposure	Spillage Exposure Occupational Injury	3	3	Medium	1) Following safe procedure for handling and dispsol 2) Employee using activity based perosnal protective equipments	3	1	Low	1)Existing safety control monitoring required periodically
41	Handling Ion Exchange system	Spillage Exposure	Spillage Exposure Occupational Injury	3	2	Medium	1) Following safe procedure for handling and dispsol 2) Employee using activity based perosnal protective equipments	2	1	Low	1)Existing safety control monitoring required periodically 2) Ammonia vapor adour to be control.
42	Prodcut change over cleaning using methanol	Spillage Exposure Fire	Spillage Exposure Occupational Injury, Process interuption, Fire & bun injury	4	3	High	1) Following safe procedure for handling and dispsol 2) Employee using activity based perosnal protective equipments 3) Uasing earthing bonding continuity & Using SS Buckets to shift matierals from one palce to other place 4) Reactors having double earthing bonding system, 5) Earth pits are monitoring contenious 6) Transferring containers with lid (SS Make) using for storing and shfiting of methnol for PCO Cleaning	4	1	Medium	1. Effective Training to be provided. 2. Fire detection, alarm system 3. Work area monitoring and VOC and LEL
43	Handling of Ammonia Gas cylinders	Fall of gas cylinder Leakage of gas from gas cylinders	Ammonia leakage, Cold burns Exposure Occupational Hazard Process interruption Fire & Medical treated or fatal Incident	4	3	High	1)Using fork list with trained employees handling activity 2) Maintaining good house keeping to avoid slip trip fall incident 3) Fork lit having periodical preventive maintenance 4) Gas cylinders are having periodical pressure testing certificates 5)lifting minimum safe height to avoid fall incident & consequeses to fall incident 6)Adequate designed chain pulley with hooks to avoided shift gas cylinder towards gas cylinder usage facility	4	1	Medium	1. Effective Training to be provided. 2. Fire detection, alarm system 3. Work area monitoring and VOC and LEL
44	Hot oil circulation system in utility area.	Spillage ,leakage,heat dissipation,highly body injuries.	Burn skin, incase of direct contact with high temperature surafe in body, slip and fall, Enviornment pollution,	5	4	Extreme	Display boards arranged as HOT SURFACE AREA DO NOT TOUCH to identify that high temperute equipments from rest of the equipments. Use proper PPE kits. Personal are trained to operate the hot oil system.if any leakage use proper tools to arrest. All pipelines are should be insulated properly. working area to be monitoring by trined person.	4	1	Medium	1) Effective training to be provided. 2) Proper PPE kit to be used. 3) Suitable gaskets to be used.

Prepared By	Reviewed By	Approved By
Name:K. Ananda (Dy.Manager)	Name: Lokeswara Duthala (Sr. Manager)	Name: R Elangovan (DGM-EHS)
Sign:  25/05/23	Sign:  25/05/23	Sign:  25/05/23

Severity Criteria for Occupational Health & Safety Hazards				
Severity of Consequence (Scale 1 = Least severe to Scale 5 = Most severe)				
1-Insignificant	2-Minor	3-Moderate	4-Major	5-Catastrophic
Work-related first aid case (e.g.: very small cut)	Work-related medical treatment case (e.g.: small cut needs medical assistance)	Work-related restricted work case (e.g.: very small cut Injury led to stop the work)	Work-related lost day case (E.g.: Fractures)	Work-related fatality or disability. (e.g., Death or loss in body part)

Severity Criteria for Environmental Aspects				
Severity of Consequence (Scale 1 = Least severe to Scale 5 = Most severe)				
1-Insignificant	2-Minor	3-Moderate	4-Major	5-Catastrophic
Negligible on-site environmental impact (low significance). e.g., a minor spill easily containable.	Onsite local environmental impact (containable) (low significance). e.g., Few minor spills, easily containable.	On-site environmental impact (containable), may attract attention of statutory authority (medium significance). e.g., a moderate spill requiring containment actions.	On-site/off-site environmental impact (containable), may lead to statutory notice/fines (high significance). e.g., a moderate spill requiring immediate containment actions on-site by ERTs.	On-site/off-site environmental impact (not easily recoverable) may lead to significant fines, prosecutions and business interruption (extreme significance). e.g., a major spill which needs immediate containment actions for both on-site/off-site by ERTs/external agencies.

Ratings for Likelihood				
Likelihood of Occurrence (Scale 1 = Least likely to Scale 5 = Most likely)				
1-Rare	2-Unlikely	3-Occasional	4-Frequent	5-Certain
May occur but only in rare circumstances (e.g., once in twenty years)	Unlikely to occur but could happen (e.g., once in ten years)	Possible and likely to occur at some time (e.g., once in five years)	Likely to occur frequently (e.g., once in a year)	Almost certain to occur (e.g., more than one time in a year)

Prepared By	Checked By	Approved By
Name: K. Ananda (Dy. Manager)	Name: Lokeswara Duthala (Sr. Manager)	Name: R Elangovan (DGM-EHS)
Sign: <i>[Signature]</i> 25/05/23	Sign: <i>[Signature]</i> 25/05/23	Sign: <i>[Signature]</i> 24/05/23

RISK SUMMARY

AO-AO7-Block Risk/Opportunity Rating	Summary of HIRA				Summary of EAIA			
	Worst Case Impacts		Residual Impacts		Worst Case Impacts		Residual Impacts	
	No	%	No	%	No	%	No	%
Opportunity	0	0	0	0	0	0	0	0
Extreme	1	3	0	0	0	0	0	0
High	6	17	0	0	1	17	0	0
Medium	27	77	7	20	4	67	1	17
Low	1	3	28	80	1	17	5	83
TOTAL	35	100	35	100	6	100	6	100

Note: HIRA: Hazard Identification & Risk Assessment. EAIA-Environmental Aspects-Impacts Assessments. Worst Case Risk/Impact: Prior to implementation of existing control measures. Residual Risk/Impact: After effective implementation of existing and additional control measures.

Risk/Impact Level	Risk/Impact Acceptability	Actions Based on Risk/Impact Levels
Low	Ensure controls	Additional controls may be considered as improvement opportunities. An annual review is needed to ensure that the risk levels assigned are not increased over time. Monitor effectiveness of existing controls.
Medium	Must ensure controls	Additional controls for improvement opportunities. Department head's attention is required to maintain the risk levels at this level and not to increase over time. Monitor effectiveness of existing controls.
High	Must act	High risk level must be reduced by implementing additional risk controls before work commences. The High risk shall be controlled by using substituted/engineering controls before commencing work. Department head's intervention is required before commencing work.
Extreme	Cannot accept	The Extreme risk should be avoided as far as possible. If avoidance is not possible, control the Extreme risk by using substituted and engineering controls before commencing work. Site management's intervention is required before commencing work.

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Name: K. Ananda (Dy. Manager)	Name: Lokeswaga Duthala (Sr. Manager)	Name: R Elangovan (DGM-EHS)
Sign: <i>[Signature]</i> 25/05/23	Sign: <i>[Signature]</i> 25/05/23	Sign: <i>[Signature]</i> 26/05/23