



APPRENTICESHIP CURRICULUM
for
Chemical Effluent Plant Treatment
Operator
RUBBER INDUSTRY
for
NSQF Level 4

National Apprenticeship Promotion
Scheme

1	Program Title	Chemical Effluent Plant Treatment Operator		
2	Program Code, if any	NA		
3	Any related NSQF approved QP/ Course/ NOS and code	CPC/Q0604		
4	Hours for Basic Training (Block I)	504 (3 Months)		
5	Hours for On the Job Training (Block II)	1512 (9 Months)		
6	Certifying body for Basic Training Program	RSDC		
7	Certifying Body for On the Job training	Industry		
8	Any Licensing requirements, wherever applicable	NA		
9	Minimum eligibility criteria (Educational and/or technical Qualification)	Diploma in Chemical Engineering/ B.Sc. Degree with Environmental studies as one of the subjects, Minimum age - 18 years completed.		
10	Trainer's Qualification and Experience	Post-Graduate in Science or Post-Graduate in Environmental Science and 5+ year Experience		
11	NCO code and occupation	Nil. Occupation: Chemical Effluent Plant Treatment Operator		
12	Proposed NSQF level	4		
13	Indicative list of training tools required to deliver this qualification (may be attached)	As per Annexure I & II		
14	Formal structure of the curriculum			
	Modules	Notional hours-Theory	Notional hours-Practical	Total duration
Basic Training Program	1. Introduction to chemical effluent treatment plant	14	14	28
	2. Maintain safe and good work environment	14	28	42
	3. Standard Methods for Water and Wastewater Laboratory Analysis	49	77	126
	4. Operation of equipment and monitor operating conditions	49	98	147
	5. Maintain Housekeeping at workplace	14	28	42
	6. Reporting and documentation	21	14	35
	7. Quality Checks	28	35	63
	8. Problem identification and escalation	14	7	21

	On the Job Training Program	1. Introduction to chemical effluent treatment plant 2. Maintain safe and good work environment 3. Standard Methods for Water and Wastewater Laboratory Analysis 4. Operation of equipment and monitor operating conditions 5. Maintain Housekeeping at workplace 6. Reporting and documentation 7. Quality Checks 8. Problem identification and escalation	21 35 63 63 28 28 35 28	28 70 350 539 63 49 63 49	49 105 413 602 91 77 98 77
15	Total Pass marks				
			Pass Marks-Theory	Pass Marks-Practical	
	Basic Training Program		105 out of 150	315 out of 450	
	On the Job Training Program		105 out of 150	315 out of 450	
16	Job description-brief			The chemical effluent treatment plant operator works with equipment to remove potentially harmful industrial, agricultural, and domestic contaminants from wastewater before it is returned to the environment or recycled.	
17	Progression from the qualification (Please show Professional and academic progression)			Chemical Effluent Plant Supervisor and Academic progression to Level 5 program	
18	Employment avenues/opportunities			1. Manufacturing units in India which are using chemicals and treating the chemical effluents inside the company before disposing: The	

		<p>apprentice may be employed with the biggest player of the trades and be a part of their manufacturing set and deliver quality work.</p> <p>2. Education and Training: They may also take up the role of the instructor in this field where they can impart their manufacturing knowledge to the aspiring students.</p>
19	<p>Assessment strategy (Basic training and On the Job Training)</p>	<p>For Basic Training & On the Job Training:</p> <ol style="list-style-type: none"> 1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each 2. Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills practical for each PC. 3. The assessment for the theory part will be based on knowledge bank of questions created by the SSC. 4. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS. 5. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).

		<p>6. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.</p> <p>7. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.</p> <p>8. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.</p> <p>9. The assessment of candidates will be conducted at NOS level.</p> <p>10. Assessment criterion has been defined for each NOS and it includes both theoretical and practical skills on which the candidate will be assessed.</p> <p>11. Practical knowledge is tested through assessor driven evaluation, Situational Judgment Tests and Simulations. A mix of the three is used to evaluate the trainee on his practical knowledge of the QP.</p> <p>12. The candidate is assessed on skills, knowledge and behavioural aspects.</p> <p>13. For On job training the assessment would be conducted by industry assessor as per industry norms through viva and practical sessions.</p>
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20	Curriculum update version and date	25/11/2019
21	Curriculum revision date	24/11/2020

Curriculum

Module Name with duration	Key Learning outcomes
Theory/Basic Training Program- Block I	
<p>Introduction to chemical effluent treatment plant</p> <p>Theory Duration (hh:mm) 14:00</p> <p>Practical Duration (hh:mm) 14:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Describe the developmental history of chemical effluent treatment plants. • Describe current industrial scenario of chemical effluent treatment plants. • Identify types of chemical effluents. • List the types of industries using chemical effluent treatment plant. • Describe major ill-effects of untreated polluted water released into sewer. • List major regulatory authorities related to pollution control. • List major industrial associations related to chemical effluent treatment. • Identify the equipment used for chemical effluent treatment. • Describe the auxiliary equipment used in chemical effluent treatment plant. • List the roles and responsibilities of a chemical effluent treatment plant operator.
<p>Maintain safe and good work environment</p> <p>Theory Duration (hh:mm) 14:00</p> <p>Practical Duration (hh:mm) 28:00</p> <p>Corresponding NOS Code CPC/N9404</p>	<ul style="list-style-type: none"> • Describe the importance of wearing protective clothing/ equipment for specific tasks and work conditions • Demonstrate safe working practices while dealing with hazards to ensure the safety of self and others. • Employ good housekeeping standards at all times. • Apply appropriate fire extinguishers for different types of fires. • Describe rescue techniques to be applied during fire hazard. • Demonstrate the correct use of a fire extinguisher. • Identify potential injuries through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals and loud noise. • Describe the regular check process of machine health to identify potential hazards. • Inform the concerned authorities about machine breakdown and damages which can potentially be hazardous to man/ machine, while carrying out operations. • Create awareness amongst others by sharing information on the identified risks. • Create a clutter-free environment at the workstation. • Categorize waste in hazardous/ non-hazardous form as per the instructions. • Demonstrate the technique of waste disposal and waste storage in the proper boxes/ bags as per the standard operating procedure (SOP). • Segregate the items which are labelled as red tag items for the process area and keep them in the correct places. • Demonstrate the process of segregating tools/ equipment/ fasteners/ spare parts as per the specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions. • Demonstrate the cleanliness around the area where material is stored • Practise stacking the various types of boxes and containers properly as per the size/ utility, to avoid any spillage or breaking of items.

	<ul style="list-style-type: none"> • Assemble extra material and tools to the designated sections. • Demonstrate proper demarcation of the various sections in the plant through the floor markings/ area markings. • Create proper labelling mechanism of instruments/ boxes/ containers and maintaining reference files/documents with the codes and the lists. • Comply with the given instructions and checks for labelling of fluids, oils, lubricants, solvents, chemicals etc. • Demonstrate storage of the fluids, oils, lubricants, solvents, chemicals to avoid spillage, leakage, fire etc. as per the SOP.
<p>Standard Methods for Water and Wastewater Laboratory Analysis</p> <p>Theory Duration (hh:mm) 49:00</p> <p>Practical Duration (hh:mm) 77:00</p> <p>Corresponding NOS Code CPC/N9406</p>	<ul style="list-style-type: none"> • Describe the four levels of effluent treatment: <ul style="list-style-type: none"> - Preliminary - Primary - Secondary - Tertiary (or advanced) • Describe the three types of treatment mechanism: <ul style="list-style-type: none"> - Physical - Chemical - Biological • Describe the process of preliminary effluent treatment level: <ul style="list-style-type: none"> - Screening - Sedimentation - Clarification • Describe the process of primary effluent treatment level: <ul style="list-style-type: none"> - Chemical unit processes - pH Control - Chemical coagulation and Flocculation • Describe the process of secondary effluent treatment level: <ul style="list-style-type: none"> - Biological unit process - Aerobic Processes - Anaerobic Processes • Describe the process of tertiary or advanced effluent treatment level. • Describe the steps of ETP plant operations, such as: <ul style="list-style-type: none"> - Screen chamber - Collection tank - Equalization tank - Flash mixer - Clarriflocculator - Aeration tank - Clarifier - Sludge thickener - Drying beds • Explain the process of addition of chemicals for effluent treatment. • Inspect equipment on a regular basis as per schedule. • Monitor operating conditions, meters and gauges. • Perform test sample collection from chemical effluent. • Record meter and gauge readings. • Operate equipment to treat the chemical effluent. • Clean and maintain equipment, tanks, filter beds, and other work areas. • Interpret the information given in the SOP. • Perform the cleaning process of the machine and equipment at regular interval. • Describe machine problem to maintenance department for resolving breakdown.

Operation of equipment and monitor operating conditions

Theory Duration

(hh:mm)

49:00

Practical Duration

(hh:mm)

98:00

Corresponding

NOS Code

CPC/N9405

- Describe measurement techniques for chemical effluent, such as:
 - Gravimetric
 - Electrochemical
 - Colorimetry or spectrophotometry
 - Titration
 - Chromatography
 - Mass Spectrometry
- Identify the types of chemical being used in the chemical effluent plant lab.
- Describe the properties of different chemicals used in the chemical effluent plant lab.
- Explain the importance of defining process requirements for a lab.
- Evaluate the sampling procedure, such as:
 - Sample collection techniques
 - Field measurements
 - Sample labelling (including location(s)) and documentation
 - Sample preservation and holding time
 - Transfer of custody and shipment of samples
 - Quality control
 - Data handling and reporting.
- Explain the types of samples for testing:
 - Grab Sample
 - Composite Sample
- Describe the tests to be carried out on chemical effluent, such as:
 - Physical
 - Chemical – Inorganic
 - Chemical – Organic
 - Bacterial
 - Pesticides
 - Radiological
 - Whole effluent toxicity
- Explain the process of sample labelling.
- Describe the process of chemical effluent sample preservation and holding time.
- Describe the process of transfer of custody and shipment of samples.
- Describe the process parameters to measure of chemical effluent, such as:
 - Temperature
 - Dissolved Oxygen
 - pH
 - Conductivity
- Describe the lab tests to be carried out for solids, such as:
 - Total Solids Dried at 103–105°C
 - Total Dissolved Solids
 - Total Suspended Solids
 - Fixed and Volatile Solids Ignited At 550°C
 - Settleable Solids
- Describe the lab tests to be carried out on sludge, such as:
 - Settled Sludge Volume
 - Sludge Volume Index
- Describe the other lab tests to be carried out on chemical effluent, such as:
 - Chemical oxygen demand (COD)
 - Biochemical oxygen demand (BOD)
 - Ammonia Determination
 - Total Kjeldahl Nitrogen

	<ul style="list-style-type: none"> - Total Phosphorus - Orthophosphate - Chloride • Describe the process of data handling and reporting.
<p>Maintain Housekeeping at workplace</p> <p>Theory Duration (hh:mm) 14:00</p> <p>Practical Duration (hh:mm) 28:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Describe what is housekeeping? • Explain the importance & purpose of housekeeping. • Describe what is '5S.' • Identify housekeeping equipment used for industrial cleaning. • Demonstrate the housekeeping of work area with specified equipment and material. • Describe the correct method for cleaning equipment and/ or machinery used during the work. • Describe the importance of following manufacturer's instructions on cleaning agents. • Describe the appropriate substitutes for disinfecting the areas. • Describe the meaning of signage for the work being executed. • Demonstrate the use of signage during the work being executed. • List personal protective gear needed for the cleaning technique and materials being utilized. • Demonstrate the handling oily material in order to prevent spillage. • Explain process of handling any accidental harm happened while the cleaning procedure. • Demonstrate the process of disposal of used and unused solutions as per manufacturer's directions. • Describe the use of MSDS (Material safety data sheet) for the chemicals used in cleaning process.
<p>Reporting and documentation</p> <p>Theory Duration (hh:mm) 21:00</p> <p>Practical Duration (hh:mm) 14:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Explain the importance of documentation. • Describe the mandatory reports for operations and document related issues. • Explain the importance of reporting. • Discuss of organization policies and guidelines. • Describe the purpose of procedures in an organization. • Interpret work instructions for working in an organization. • Describe appropriate ways of communication during day to day work. • Describe the process of overcoming problems in communication. • Explain the traits of active listening. • Describe the best practices for good writing skill. • Describe process of resolving conflict with a team member. • Explain the process to determine priority of work from pending work list. • List different methods of recording information. • Describe the use of organisation's standard operating procedure (SOP) for filling/ maintaining the documents. • Explain procedures related to maintain confidentiality of information. • Describe the reporting procedures in case of disclosing information to any outside party. • Describe the process of outlining data/ issues/ accidents as relevant in a timely way. • Describe the process of presenting documents in front of all proper authorities to examine.

<p>Quality Checks</p> <p>Theory Duration (hh:mm) 28:00</p> <p>Practical Duration (hh:mm) 35:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Explain the importance of quality for any process or product. • Describe the use of quality control procedures for maintaining product or process quality. • Describe the procedure for selecting the material/ product and performing quality checks without affecting the process. • Determine the availability of monitoring and measuring devices. • Explain the need to report the quality result within the stipulated time. • List implications (impact on internal/ external customers) of defective products or process. • Identify suitable measuring apparatus, gear, tools, accessories, etc. as per process requirement. • Determine possible reasons for non-confirmation to quality standard. • Evaluate the influence on output due to non – conformance of process requirement. • Describe the effectiveness of remedial action to improve quality level. • Explain the results of the standard checks. • Demonstrate the documenting processes where the reason for the quality issue cannot be identified. • Describe the quality control processes to determine the performance of sample collection techniques: <ul style="list-style-type: none"> - Trip Blank - Field Blank/ Field Reagent Blank - Equipment/ Rinsate Blank - Field Duplicate - Split Samples - Reagent Blank - Quality Control Sample - Matrix Spike/Matrix Spike Duplicate
<p>Problem identification and escalation</p> <p>Theory Duration (hh:mm) 14:00</p> <p>Practical Duration (hh:mm) 07:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Explain indicators of problems at workplace. • Explain the impact of problems on the output. • Describe the methodology for identifying the corrective actions for each problem. • Explain the documentation procedure for recording quality problems. • Explain the process, in which each problem needs to be escalated. • Describe the process of recognizing the incorrect application that may result in issues. • Describe the use of suitable materials, samples, tests, and analysis to confirm suspected causes for non – conformance. • Explain the process of applying corrective action. • Describe the process of outlining issue and remedial action in a suitable way. • Describe the process of evaluation of the effects of the remedial actions taken.
<p align="center">On the Job Training Program- Block II</p>	
<p>Introduction to chemical effluent treatment plant</p> <p>Theory Duration (hh:mm) 21:00</p> <p>Practical Duration (hh:mm) 28:00</p>	<ul style="list-style-type: none"> • Describe the layout of chemical effluent treatment plant. • Describe the details of industry and chemical being used in the company of on-job-training. • Explain types of chemical effluents produced in the industry. • Describe major ill-effects of untreated polluted water released into sewer. • Identify the regulatory authority jurisdiction related to pollution control of the company. • Describe the industrial associations related to chemical effluent treatment for the company.

<p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Identify the equipment used by the company for chemical effluent treatment. • Identify and describe the auxiliary equipment used in chemical effluent treatment plant by the company. • List the roles and responsibilities of persons working in the chemical effluent treatment plant of the company. • List common rules of the company to be followed by trainees. • List safety instructions to be followed by trainees during on-the-job training.
<p>Maintain safe and good work environment</p> <p>Theory Duration (hh:mm) 35:00</p> <p>Practical Duration (hh:mm) 70:00</p> <p>Corresponding NOS Code CPC/N9404</p>	<ul style="list-style-type: none"> • Demonstrate good housekeeping standards at the workplace as per company's SOP (Standard Operating Procedure). • Describe the PPEs (Personal Protective Equipment) to be used at the workplace. • Demonstrate the correct use of PPEs for specific tasks and work conditions. • Demonstrate safe working practices while working at the workplace and ensure the safety of self and others. • Identify the correct fire extinguisher based on the type of fire to be extinguish. • Demonstrate the use of appropriate fire extinguishers for different types of fires. • Describe rescue techniques to be followed during any emergency at the workplace. • Describe potential injuries and protection against: <ul style="list-style-type: none"> - Sharp objects, - Burns, - Fall, - Electricity, - Gas leakages, - Radiation, - Poisonous fumes, - chemicals - loud noise • Demonstrate the process of checking machine health to identify potential hazards with support of the maintenance team. • Identify the machine breakdown situations and damages. • Demonstrate process of escalation to the concerned authorities. • Demonstrate the ways of maintaining a clutter-free environment at the workplace. • Identify hazardous/ non-hazardous waste as per the company's SOP. • Demonstrate the technique of waste disposal as per the company's SOP. • Demonstrate technique of hazardous waste storage in the boxes/ bags as per the standard operating procedure (SOP) for disposal. • Describe the meaning of red tag items in industry. • Segregate the items which are labelled as red tag items for the process area. • Demonstrate storage of red tag items at the correct places. • Describe the importance of segregating tools/ equipment/ fasteners/ spare parts into trays, cabinets, lockers. • Demonstrate the process of segregating tools/ equipment/ fasteners/ spare parts as per the specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions. • Demonstrate the best practices for stacking of the boxes and containers.

	<ul style="list-style-type: none"> • Demonstrate the handling and storage of extra material and tools. • Demonstrate demarcation process of different sections of the treatment plant through the floor markings/ area markings. • Create labelling mechanism for instruments/ boxes/ containers • Demonstrate the process of maintaining reference files/ documents. • Demonstrate the process of labelling of fluids, oils, lubricants, solvents, chemicals etc. • Demonstrate storage of the fluids, oils, lubricants, solvents, chemicals to avoid spillage, leakage, fire etc. as per the SOP.
<p>Standard Methods for Water and Wastewater Laboratory Analysis</p> <p>Theory Duration (hh:mm) 63:00</p> <p>Practical Duration (hh:mm) 350:00</p> <p>Corresponding NOS Code CPC/N9406</p>	<ul style="list-style-type: none"> • Demonstrate the preliminary level process of effluent treatment. • Demonstrate the primary level process of effluent treatment. • Demonstrate the secondary level process of effluent treatment. • Demonstrate the tertiary or advanced level process of effluent treatment. • Demonstrate the physical treatment mechanism for chemical effluent treatment. • Demonstrate the chemical treatment mechanism for chemical effluent treatment. • Demonstrate the biological treatment mechanism for chemical effluent treatment. • Demonstrate the process of screening, sedimentation and clarification for carrying our preliminary effluent treatment. • Demonstrate the Chemical unit process for primary effluent treatment level. • Demonstrate the pH control process for primary effluent treatment level. • Demonstrate the chemical coagulation and flocculation process for primary effluent treatment level. • Demonstrate the pH control process for primary effluent treatment level. • Demonstrate the pH control process for primary effluent treatment level. • Demonstrate the pH control process for primary effluent treatment level. • Demonstrate the biological unit process for secondary effluent treatment level. • Demonstrate the aerobic process for secondary effluent treatment level. • Demonstrate the anaerobic process for secondary effluent treatment level. • Identify different parts of ETP plant, such as: <ul style="list-style-type: none"> - Screen chamber - Collection tank - Equalization tank - Flash mixer - Clarriflocculator - Aeration tank - Clarifier - Sludge thickener - Drying beds • Demonstrate chemicals addition process for effluent treatment. • Create process inspection plan for all the equipment used in chemical effluent treatment plant. • Demonstrate process inspection as per schedule. • Record readings of process parameter.

	<ul style="list-style-type: none"> • Demonstrate sample collection from lab testing of treated chemical effluent. • Perform cleaning of effluent treatment equipment, tanks, filter beds. • Determine the work schedule in concurrence with Superior. • Use SOP instruction for carrying out activities at effluent treatment plant. • Determine the availability of data sheet, manuals, work instructions required for performing the job. • Determine general problems of effluent treatment plant. • Describe break down to maintenance department.
<p>Operation of equipment and monitor operating conditions</p> <p>Theory Duration (hh:mm) 63:00</p> <p>Practical Duration (hh:mm) 539:00</p> <p>Corresponding NOS Code CPC/N9405</p>	<ul style="list-style-type: none"> • Demonstrate gravimetric measurement techniques for chemical effluent. • Demonstrate electrochemical measurement techniques for chemical effluent. • Demonstrate colorimetry or spectrophotometry measurement techniques for chemical effluent. • Demonstrate titration measurement techniques for chemical effluent. • Demonstrate chromatography measurement techniques for chemical effluent. • Demonstrate mass spectrometry measurement techniques for chemical effluent. • List the chemicals required for lab testing in the chemical effluent plant lab. • Explain the properties of the chemicals used in the chemical effluent plant lab. • Explain the process requirements for a chemical effluent plant lab. • Demonstrate the sample collection techniques. • Demonstrate the field measurement process. • Demonstrate the sample labelling/identification and documentation process for chemical effluent plant lab. • Describe the sample preservation and holding time for chemical effluent plant lab. • Describe the process of transferring the custody and shipment of samples. • Describe the instructions for quality control of lab testing. • Demonstrate the data handling and reporting process during lab testing. • Demonstrate grab methodology of sample collection for testing in a chemical effluent plant. • Demonstrate composite methodology of sample collection for testing in a chemical effluent plant. • Identify and demonstrate the physical tests as per company's SOP. • Identify and demonstrate the chemical tests as per company's SOP, such as: <ul style="list-style-type: none"> - Inorganic - Organic • Identify and demonstrate the bacterial tests as per company's SOP. • Identify and demonstrate the pesticides tests as per company's SOP. • Identify and demonstrate the radiological tests as per company's SOP. • Demonstrate the whole effluent toxicity tests as per company's SOP. • Demonstrate the measurement of the process parameters of chemical effluent as per company's SOP, such as: <ul style="list-style-type: none"> - Temperature of effluent in different tanks - Dissolved Oxygen in effluent at different stage - pH of effluent at different stage - Conductivity of effluent at different stage • Perform the lab tests for total solids dried at 103–105°C.

	<ul style="list-style-type: none"> • Perform the lab tests for total suspended solids. • Perform the lab tests for fixed and volatile solids ignited at 550°C. • Perform the lab tests for settleable solids. • Demonstrate the lab tests to be carried out on sludge, such as: <ul style="list-style-type: none"> - Settled Sludge Volume - Sludge Volume Index • Demonstrate the chemical oxygen demand (COD) test on chemical effluent. • Demonstrate the biochemical oxygen demand (BOD) test on chemical effluent. • Demonstrate the ammonia determination test on chemical effluent. • Demonstrate the total kjeldahl nitrogen test on chemical effluent. • Demonstrate the total phosphorus test on chemical effluent. • Demonstrate the orthophosphate test on chemical effluent. • Demonstrate the chloride test on chemical effluent.
<p>Maintain housekeeping at workplace</p> <p>Theory Duration (hh:mm) 28:00</p> <p>Practical Duration (hh:mm) 63:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Develop the levels of hygiene required by the workplace. • Describe the correct method for cleaning equipment and/ or machinery used during the work. • Describe the importance of following manufacturer's instructions on cleaning agents. • Explain the importance of applying treatments evenly and the implication of not doing that properly. • Demonstrate the methods to check the treated surface and equipment on completion of cleaning. • Demonstrate the escalation procedures for soils or stains that could not be removed. • Choose the appropriate substitutes for disinfecting the areas if the suitable machinery and materials are not present and notify the supervisor. • Demonstrate the use of proper signage for the work being executed. • Use personal protective gear needed for the cleaning technique and materials being utilized. • Perform cleaning activities without disrupting other people. • Demonstrate to outline the suitable authority about any issues in executing your work. • Perform the escalation to the suitable authority for any extra cleansing needed that is outside one's duty or skill. • Demonstrate the right way of handling oily material in order to prevent spillage. • Demonstrate the use workplace policies to handle any accidental harm during the cleaning procedure. • Demonstrate the process of following manufacturer's guidelines for removal of used and unused solutions. • Demonstrate the process of filling up documents related to housekeeping.
<p>Reporting and documentation</p> <p>Theory Duration (hh:mm) 28:00</p> <p>Practical Duration (hh:mm) 49:00</p>	<ul style="list-style-type: none"> • Explain the documentation requirement of effluent treatment plant, such as: <ul style="list-style-type: none"> - Process inspection reports - Lab test reports - Quantity of treated effluent • Create the mandatory reports for operations related issues. • Explain the importance of reporting. • Interpret the organization's policies and guidelines related to reporting and documentation. • Describe the purpose of following procedures in an organization.

<p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Demonstrate the use of work instructions for carrying out a task. • Describe the importance of communication process at workplace. • Demonstrate the process of overcoming problems in communication with fellow workers. • Describe the traits of active listening. • Demonstrate the best practices available for good writing skill. • Explain ways of resolving conflict with a team member. • Determine priority of work from pending work list. • List different methods of recording information related to effluent treatment plant operations. • Use organisation's standard operating procedure (SOP) for filling/ maintaining the documents. • Demonstrate the process of maintaining complete documentation accurately and within agreed timescales. • Explain procedures to maintain confidentiality of information. • Interpret the reporting procedures for disclosing information to any outside party. • Describe the process of outlining data/ issues/ accidents as relevant in a timely way. • Apply the outlining policies as per the organization. • Describe the timelines for different reports as per organization's policies and their importance. • Demonstrate the process of presenting documents to higher authorities to examine. • Demonstrate the communication process to the higher authority of queries for information collected.
<p>Quality Checks</p> <p>Theory Duration (hh:mm) 35:00</p> <p>Practical Duration (hh:mm) 63:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Explain the importance of quality control procedures. • Demonstrate the procedure for selecting the material/ product and performing quality checks without affecting the process. • Evaluate the availability of monitoring and measuring devices. • Identify the need to report within the stipulated time. • List implications (impact on internal/external customers) of defective products, materials or component. • Use suitable measuring apparatus, gear, tools, accessories, etc. as per SOP. • Recognize possible reasons for non-confirmation to quality standard. • Determine the influence on output due to non – conformance to organization's SOP. • Evaluate effectualness of remedial action to improve quality level. • Explain the results of the standard check accurately. • Demonstrate the process of outlining the results of the action executed. • Demonstrate the documenting processes where the reason for the quality issue cannot be identified. • Demonstrate the testing processes to determine the effectiveness of sample collection techniques: <ul style="list-style-type: none"> - Trip Blank - Field Blank/ Field Reagent Blank - Equipment/ Rinsate Blank - Field Duplicate - Split Samples - Reagent Blank - Quality Control Sample - Matrix Spike/Matrix Spike Duplicate

<p>Problem identification and escalation</p> <p>Theory Duration (hh:mm) 28:00</p> <p>Practical Duration (hh:mm) 49:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> • Describe the different problems occurring during effluent treatment operations. • Explain the impact of problems on operations and work output. • Explain the documentation procedure for recording quality problems, as per company's SOP. • Recognize any incorrect process or action that may result in issues. • Demonstrate the problem-solving techniques, such: <ul style="list-style-type: none"> - Why-why analysis - Fish-bone diagram - 8D method - Problem Solving A3 • Demonstrate the testing and result analysis to identify causes to confirm suspected causes for non – conformance. • Identify the actions for solving the problem. • Formulate the correct method for carrying out corrective actions outlined for each problem. • Decide the timeline for apply corrective actions. • Describe the process of evaluation of the effects of the remedial action taken. • Explain the manner, in which unsolved problem needs to be escalated. • Demonstrate the process of outlining issue and remedial action in a suitable way. • Develop remedial actions for issues recognized according to the organization processes.
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List of Assessable outcomes/assessment criteria - Block-II

Assessment Criteria

The assessment would be conducted by industry assessor as per industry norms through viva and practical sessions.

Annexure I: Tools and Equipment for Basic Training (Block I)

Sector: Rubber Industry

Block I QP Code with Version No. or Course Code: CPC/Q0604, V1.0

Block I QP Name or Course Name: Chemical Effluent Treatment Plant Operator

Block I NSQF Level: 4

S. No.	Equipment Name	Minimum number of Equipment required (per batch of 30 trainees)	Unit Type	Is this a mandatory Equipment to be available at the Training Center (Yes/No)	Dimension/ Specification / Description of the equipment/ ANY OTHER REMARK
1	Laptop/ PC	1		Yes	
2	Projector	1		Yes	
3	Erlenmeyer flasks 250 ml. Borosilicate Glass	36 nos.		Yes	
6	Erlenmeyer flasks 100 ml. Borosilicate Glass	24 nos.		Yes	
7	Burettes with Teflon stop cock - 25 ml. Borosilicate Glass	16 nos.		Yes	
8	Burettes with Teflon stop cock - 50 ml. Borosilicate Glass	16 nos.		Yes	
9	Pipettes 10 ml. Borosilicate Glass (Volumetric Type)	36 nos.		Yes	
10	Pipettes 25 ml. Borosilicate Glass (Volumetric Type)	36 nos.		Yes	

11	Pipettes measuring 0 to 5 ml. Borosilicate Glass	24 nos.		Yes	
12	Pipettes measuring 0 to 10 ml. Borosilicate Glass	24 nos.		Yes	
13	Pipettes measuring 0 to 1 ml. Borosilicate Glass	6 nos.		Yes	
14	Pipettes 1ml. (graduated) Borosilicate Glass	12 nos.		Yes	
15	Measuring cylinders 25 ml. Borosilicate Glass	10 nos.		Yes	
16	Measuring cylinders 50 ml. Borosilicate Glass	24 nos.		Yes	
17	Volumetric flask 100 ml. Borosilicate Glass	24 nos.		Yes	
18	Volumetric flask 250 ml. Borosilicate Glass	24 nos.		Yes	
19	Volumetric flask 500 ml. Borosilicate Glass	24 nos.		Yes	
20	Volumetric flask 1000 ml. Borosilicate Glass	12 nos.		Yes	
21	Funnels Buchner different sizes 10 to 25 cm. dia.	6 nos.		Yes	
22	Funnels separatory 250 ml. Borosilicate Glass	12 nos.		Yes	
23	Beakers 100 ml. Borosilicate Glass	48 nos.		Yes	
24	Beakers 250 ml. Borosilicate Glass	48 nos.		Yes	
25	Beakers 400 ml.	48 nos.		Yes	
26	Beakers 600 ml. Borosilicate Glass	24 nos.		Yes	
27	Watch glasses 5 cm.dia.	24 nos.		Yes	
28	Watch glasses 7.5 cm.dia.	48 nos.		Yes	
29	Dishes evaporating 7.5 cm. dia.	24 nos.		Yes	
30	Thermometers 0 to 110°C	24 nos.		Yes	

31	Thermometers 0 to 250°C	12 nos.		Yes	
32	Thermometers 0 to 350°C	12 nos.		Yes	
33	Thermometers for drying oven	3 nos.		Yes	
34	Boiling flasks with round bottom 250ml.	16 nos.		Yes	
35	Boiling flasks with round bottom 500ml. for each distilling flasks 50 ml., 100 ml., 250 ml.	16 nos.		Yes	
36	Filtering flasks 250 ml.	24 nos.		Yes	
37	Filtering flasks 500 ml.	24 nos.		Yes	
38	Condensers Liebig 30 mm. long Borosilicate Glass	24 nos.		Yes	
39	Gas generator (Kips) 500 ml.	5 nos.		Yes	
40	Gas washing bottles (Dressler)	24 nos.		Yes	
41	Crucibles porcelain 5 cm, dia, height 4 cm indigenous	60 nos.		Yes	
42	Test tube (160 mm x 15 mm.)	500 nos.		Yes	
43	Tubes for centrifuge	500 nos.		Yes	
44	Bottles with droppers	16 nos.		Yes	
45	Bottles for solids 50 ml. Borosilicate Glass	24 nos.		Yes	
46	Bottles for solids 100 ml. Borosilicate Glass	24 nos.		Yes	
47	Bottles for solutions 100 ml. Borosilicate Glass	24 nos.		Yes	
48	Bottles for solutions 250 ml. Borosilicate Glass	24 nos.		Yes	
49	Bottles for solutions 1000 ml. Borosilicate Glass	12 nos.		Yes	
50	Bottles for solutions 2000 ml. Borosilicate Glass	12 nos.		Yes	

51	Desiccators vacuum 150mm Diameter Borosilicate Glass	4 no		Yes	
52	Tongs (forceps) nickel for crucibles & weights size 8 inches	16 no		Yes	
53	Tongs long for crucibles (muffle furnace) size 15 inches	4 no		Yes	
54	Spatulas nickel 8"	16 no		Yes	
55	Test tube support for 10-12 test tubes	16 no		Yes	
56	Tripods	16 no		Yes	
57	Asbestos wire gauge	36 no		Yes	
58	Test tube holders	16 no		Yes	
59	Burette stand with clamp & clamp holders	20 no		Yes	
60	Triangles clay	36 no		Yes	
61	Glass rods	5 kg		Yes	
62	Petri Disc	6 no.		Yes	
63	Analytical balances of different makes 200 gram 0.001 mg	1 No		Yes	
64	Digital Balance capacity 1KG, accuracy 1mg	1 No		Yes	
65	Thermometers: (a) 0 to 110* C (b) 0 to 250* C (c) 0 to 360* C	12 no 12 no. 12 no.		Yes	
66	Water baths (6 places) (Electrically heated)	1 no		Yes	
67	Sand bath	1 no		Yes	
68	pH meter Digital	3 no		Yes	
69	Auto titrator	1 no		Yes	
70	Conductivity meter	3 no		Yes	
71	Magnetic stirrers (with heating plate) 2 liters capacity	5 nos		Yes	
72	Mortar, 100mm, porcelain with pestle	2 no		Yes	
73	Heating plates (Electrical) 1000 watt	2 no		Yes	
74	Melting point apparatus	4 no		Yes	
75	Apparatus for	1 no		Yes	

	determination of flash point				
76	Bunsen's burners	16 no		Yes	
77	Steam generator (copper) for steam distillation 2 ltr cap	4 no		Yes	
78	Distilled water plant 4 ltr /Hr	2 nos		No	
79	TDS Meter digital	1		Yes	
80	Heating Mental 1,2 & 5 ltr	1 set		Yes	
81	COD Apparatus	1		Yes	
82	BOD Apparatus	1		Yes	
83	Safety goggles	30		Yes	
84	Rubber gloves	30		Yes	
85	Asbestos gloves	30		Yes	
86	Fire extinguisher	2		Yes	For extinguishing A, B, C, D type fires
87	Apron	30		Yes	
88	Helmet	30		Yes	
89	First aid box	1		Yes	