



Australian Government

Department of Education, Employment and Workplace Relations

FPPREC440A Troubleshoot and rectify chemical recovery operations

Release: 1

FPPREC440A Troubleshoot and rectify chemical recovery operations

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the outcomes required to troubleshoot and rectify chemical recovery operations in the pulp and paper industry

General legislation, regulatory, licensing and certification requirements applicable to this unit are detailed in the range statement

Specific high risk (and non-high risk) load shifting licensing requirements for this unit may be applicable and are to be met separately and prior to the achievement of this unit

Application of the Unit

Application of the unit

This unit applies to operators who troubleshoot and rectify chemical recovery operations in the pulp and paper industry. This work typically involves complex integrated equipment and continuous operations

This unit generally applies to those who:

- identify and analyse causes of faults
- rectify process problems, equipment and product quality faults, and
- record and report system performance and product quality data

to meet safety, quality and productivity requirements

It does not include monitoring, controlling, starting up or shutting down chemical recovery operations

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and analyse causes of faults	1.1. Causes of faults are identified and analysed within Occupational Health and Safety (OHS) regulations, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements 1.2. Warning devices are interpreted to determine fault type and location 1.3. Samples for a range of tests are taken 1.4. Quality faults and variations are identified by observation, systematic sampling and testing 1.5. Sampling and testing results are interpreted to identify variations from specifications or schedule 1.6. Causes and sources of process problems or equipment faults are identified, located and analysed 1.7. Relevant sources of information are accessed and interpreted to assist analysis
2. Rectify process problems and equipment faults	2.1. Process problems and equipment faults are rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements 2.2. Operator level on-line adjustments are conducted 2.3. Plant is shut down and isolation procedures are implemented prior to fault rectification 2.4. Hazardous conditions are identified, appropriate action is taken and the conditions communicated to relevant personnel 2.5. Faulty equipment is isolated or bypassed, repaired or replaced as required 2.6. Plant and equipment are returned to normal operation as required 2.7. Action taken is communicated to relevant personnel
3. Rectify product quality faults	3.1. Product quality is rectified within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements 3.2. Out-of-specification product is controlled 3.3. Faults and causes are rectified if appropriate, or recommendations made for further action 3.4. Further tests are conducted as required
4. Report and record	4.1. System performance and product quality data is

ELEMENT	PERFORMANCE CRITERIA
system performance and product quality data	reported and recorded within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements
	4.2. Variations from process specification are recorded
	4.3. Actions undertaken to troubleshoot and rectify faults are recorded
	4.4. Details of hazardous conditions or situations are documented as required
	4.5. Relevant information is communicated to appropriate personnel

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the skills and knowledge required for this unit.

Required skills

- Identifies, accesses and interprets relevant historical and operational data
- Uses required forms of communication in troubleshooting and rectifying chemical recovery operations
- Communicates effectively with personnel to assist with analysis and resolution of operational problems
- Prepares detailed written information
- Reads and interprets required documentation, procedures and reports
- Interprets instruments, gauges and data recording equipment
- Assists others to identify and resolve operational problems in the workplace
- Accesses, navigates and enters computer-based information
- Identifies and actions systems, quality and equipment faults within level of responsibility
- Identifies causes and effects of faults and corrective action on associated processes
- Selects and uses appropriate troubleshooting methods
- Takes timely corrective action to maximise safety, quality and productivity
- Undertakes necessary calculations to aid troubleshooting as required
- Takes samples, conducts tests, interprets and records results if required
- Uses measuring equipment as required
- Maintains situational awareness in the work area
- Handles emergencies or crash shutdowns
- Operates high risk (and non-high risk) load shifting equipment as required

REQUIRED SKILLS AND KNOWLEDGE

- Analyses and uses sensory information to adjust process to maximise safety, quality and productivity
- Uses electronic and other control systems to control equipment and processes as required

Required knowledge

- Procedures, regulations and legislative requirements relevant to chemical recovery operations including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping
- Use and handling requirements of chemicals used; their purpose, effects, MSDS and SOP
- Relevant forms of communication
- Detailed knowledge of chemical recovery plant, processes and associated services sufficient to troubleshoot including:
 - plant layout
 - theory of operation
 - causes and effects of adjustments made to chemical recovery plant and processes
 - relationships between chemical recovery plant, processes and associated services
- An appropriate range of troubleshooting methods
- Sampling and testing processes for plant and system operations, and process monitoring - purpose, standards and procedures as per site agreements
- Causes and effects of unplanned shutdown and appropriate responses
- Maintenance system as it applies to chemical recovery operations
- Application of high risk (and non-high risk) load shifting equipment as required
- Sensory information that indicates a deviation from standard operating parameters
- Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control the chemical recovery, within level of responsibility

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence should be relevant to the work. It should satisfy the requirements of the elements and performance criteria and include consideration of:

- the required knowledge and skills tailored to the needs of the specific workplace
- applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements
- applicable aspects of the range statement
- practical workplace demonstration of skills in troubleshooting and rectifying chemical recovery operations

Context of and specific resources for assessment

A workplace assessment must be used to assess:

- the application of required knowledge on the job
- the application of skills on the job, over time and under a range of typical conditions that may be experienced in chemical recovery operations

Access to the full range of equipment involved in integrated continuous manufacturing of chemical recovery operations in a pulp or paper mill is required

Method of assessment

A combination of assessment methods should be used. The following examples are appropriate for this unit:

- observation of applied skills and knowledge on the job
- workplace demonstrations via a mock-up or simulation that replicate part/s of the job
- answers to written or verbal questions about specific skills and knowledge
- third-party reports from relevant and skilled personnel
- written evidence e.g. log sheet entries, checklist entries, test results

Assessment processes and techniques must be culturally appropriate and in keeping with the language

EVIDENCE GUIDE

and literacy capacity of the learner and the work being performed. This includes conducting an assessment in a manner that allows thoughts to be conveyed verbally so that the learner can both understand and be understood by the assessor (e.g. use plain English and terminology used on the job)

A holistic assessment with other units relevant to the pulp and paper industry, mill and job role is recommended

Additional information on approaches to assessment for the pulp and paper industry is provided in the Assessment Guidelines for this Training Package

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Productivity requirements may include:

- energy efficiency
- waste minimisation
- evaporation minimisation, including landfill and waste water reduction
- environmentally safe waste disposal
- consideration of resource utilisation, including fibre efficiency
- minimising delays
- chemical recovery maximisation
- meeting key performance indicators
- line speed
- handovers
- quality checks
- meeting output targets i.e. net tonnes per employee per annum
- machine/process time availability i.e. time the machine or process is making product

RANGE STATEMENT

Chemical recovery processes may include:

- machine/process production rate
- evaporator operations
- condensate stripper
- lime mud treatment
- Wet Air Oxidation (WAO)
- causticising plant operations
- recovery boiler operations
- direct alkali reduction system (DARS) operations
- foul gas and condensate incineration

Chemicals may include:

- white liquor
- green liquor
- black liquor
- condensates
- non-condensable gases
- thick liquor
- spent liquor
- quench liquor
- weak wash
- anthraquinone (AQ)
- caustic
- magnesium oxide
- sulphur

Materials and supplies may include:

- steam
- compressed air
- chemicals
- water
- power

Equipment may include:

- power or steam generation
- pneumatic systems
- water supply systems and equipment
- process plant
- pumps and transfer equipment
- mechanical, hydraulic and electrical systems
- process monitoring and management equipment
- mobile equipment (e.g. skid steer, forklift, elevated work platform, loaders)

RANGE STATEMENT

- computer systems
 - electronic screens and alarms
 - process control systems
 - analogue and digital instruments
 - fully automated, semi-automated, manually operated plant and equipment appropriate to chemical recovery operations
- Electronic control systems may include:
- Digital Control System (DCS)
 - touch screens
 - robotics
- Legislation, regulatory, licensing and certification requirements may include:
- OHS and environmental requirements (local, state and commonwealth)
 - activity or task specific high risk (and non-high risk) load shifting licensing requirements
 - hazardous chemical handling
- Documentation, procedures and reports may include:
- SOP
 - quality procedures
 - environmental sustainability requirements/practices
 - plant manufacturing operating manuals
 - work instructions and orders
 - incident reports
 - log sheets and shift reports
 - oil or chemical spills and disposal guidelines
 - plant isolation documentation
 - safe work documentation (e.g. plant clearance, job safety analysis, permit systems)
 - emergency operational procedures (EMOs)
 - process and instrument diagrams
 - non-conformance reports

RANGE STATEMENT

Maintenance may include:

- operator level maintenance as per site agreement
- maintenance systems
- operator maintenance schedules
- maintenance suppliers
- proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)

Actions may include:

- process adjustments
- reporting to authorised person
- rectifying problem within level of responsibility

Communications may include

interaction with:

- team members
- internal or external customers and suppliers
- maintenance services
- production/services co-ordinator
- operational management
- statutory authorities

Situational awareness may include

awareness of:

- traffic
- pedestrians
- location of equipment
- product
- hazards
- obstruction
- unexpected movement

Sensory information may include:

- visual
- sound
- feel
- touch
- smell
- vibration
- temperature

Forms of communications may include:

- written e.g. log books, emails, incident and other reports, run sheets, data entry

RANGE STATEMENT

- reading and interpreting documentation e.g. SOP, manuals, checklists, drawings
- verbal e.g. radio skills, telephone, face to face, handover
- non-verbal e.g. hand signals, alarms, observations
- signage e.g. safety, access

Unit Sector(s)

Not Applicable