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About the BioTalent Canada bio-economy skills profiles

Biotechnology's fusion of science and business creates unique requirements for occupations in the sector. Executives and managers must have technical expertise; technical staff often need entrepreneurial skill sets. Occupational descriptions from other sources don't always fit the bio-economy context. That's why, in partnership with industry stakeholders, BioTalent Canada has developed skills profiles specific to the bio-economy including this description of the role Biofuels Plant Managers.

Occupational Definition

Biofuels Plant Managers are responsible for all aspects of plant operations including: health and safety, quality assurance, regulatory compliance, production, training, standard operating procedures, human resources, budget, maintenance, and facility management. They work with senior management to promote plant profitability, expansion and growth. They provide guidance, input and oversight to operations and maintenance activities by collaborating on solutions to biofuels production plant issues. They ensure that production is efficient and effective. They collaborate on the development of capital and operating budgets and are held accountable for delivering on-time, on-budget results. They ensure that all levels of safety within the plant and the environmental conditions meet compliance standards at all times. Biofuels Plant Managers work for Canadian biotechnology companies of different sizes (i.e., small, medium, large) and in biotechnology areas such as:

- Agriculture
- Aquaculture
- Bioenergy
- Bioproducts
- Biosciences
- Environment
- Food Processing
- Forestry
- Industrial
- Natural Resources
- Nutraceuticals
- Pharmaceuticals

Components of the skills profile

Every BioTalent Canada skills profile presents the areas of competence, tasks and sub-tasks associated with a specific occupation.

Area of competence (AC): This describes a major function or responsibility associated with the profession, trade or position.

Task: This is a specific, observable unit of work with definite start and end points. Tasks can be broken down into two or more steps and are generally performed in a limited period of time. Tasks and ACs are identified in behavioural terms, beginning with a verb that describes the applied behaviour.

Subtask: This is a distinct, observable activity that comprises the steps involved in a task.

Important Action/Performance Standard: This provides a criterion for assessing competence and may be used as a performance indicator.

Focus on competencies

The BioTalent Canada skills profiles are built around *areas of competence* because competencies are flexible, inclusive and linked directly to performance: they are the traits or qualities a professional must have to succeed in a given role within a given organization, and can be used for recruiting, professional development, curriculum planning and many other purposes.

How to use the profiles

The complete contents of this or any BioTalent Canada skills profile are unlikely to be used for any one position. Because they are comprehensive, they include every area of competence, task and subtask that *could* be required for a specific occupation. In reality, the definition of a given job will encompass a narrower subset of the profile. Hiring organizations must choose the elements of the profiles that are relevant to their businesses—and tailor those elements as necessary to more precisely describe their particular job requirements.

The profiles can be put to many uses:

- ***Employers*** can use them to develop job descriptions, performance evaluations, professional development, succession planning, team building, target skills needed, and recruitment plans.
- ***Job seekers*** can use them to tailor their resumes, prepare for interviews, see job descriptions and identify additional professional development needs.
- ***Educators*** can build industry-oriented curricula from the profiles to produce job-ready graduates.
- ***Students*** can enhance their understanding of employers' expectations and choose the right educational programs to equip themselves with the skills for success.

Scenario

The following illustrates how an employer might use the BioTalent Canada skills profiles to identify professional development priorities for his or her team.

Step 1

The employer would review the ACs for each occupation and identify which apply to the related positions within his or her company, omitting those that are not relevant.

Step 2

Under the selected ACs, the employer then notes which of the associated tasks, subtasks and important actions are relevant to that specific position within his or her business.

Step 3

Now with a complete, tailored profile, the employer can assess employee performance. Needs areas are easily identified and defined—to a significant depth of detail.

Step 4

Based on the needs analysis, the employer can either develop or seek out professional development programs that address employee needs areas.

Situational Analysis

Biofuels Plant Managers (BPMs) are responsible for all aspects of operations of biofuel plants including: health and safety, environmental protection and sustainability, regulatory compliance, production and productivity, quality assurance, training, standard operating procedures, human resources, budget, maintenance, and facility management. They direct the day-to-day business operations of the biofuels facility including communicating with colleagues, peers, subordinates or external parties; providing consultation advice to others; developing and building teams; analyzing data and information; making decisions and solving problems; and, continually updating their technical knowledge. They also work with senior management to promote plant profitability, expansion and growth. They provide guidance, input and oversight to operations and maintenance activities by collaborating on solving problems relating to biofuels production. They ensure that production is efficient, effective and sustainable. They collaborate on the development of capital and operating budgets and are held accountable for delivering on-time, on-budget results. They ensure that safety within the plant and the environmental conditions meet compliance standards at all times. Biofuels Plant Managers work for Canadian biotechnology companies of different sizes (i.e., small, medium, large) and in biotechnology areas such as: agriculture, food processing, forestry, bioenergy and bioproducts.

BPMs are responsible for ensuring all equipment in the plant is operated following Good Manufacturing Practices and established standard operating procedures (SOPs). They identify, investigate, and resolve any technical issues that arise during the manufacturing process which may be a result of equipment failure, faulty processes, or non-conformance to formulas or procedures. BPMs are ultimately responsible for promoting health and safety, and may complete some sampling and laboratory analysis when ensuring compliance with health and safety policies.
When preparing and managing plant-wide budgets, BPMs strive to ensure production is efficiently maximized and that health, environmental and economic risks are minimized. They provide guidance to ensure proper levels of maintenance and continuous improvements toward quality assurance targets are made. They revise policies and procedures to achieve high levels of morale, productivity, and work relationships.
BPMs seek to provide solid leadership through the facilitation of best practice and process initiatives. They conduct meetings with staff to ensure all operational issues are being communicated, and are in compliance with plant and corporate operating procedures. To ensure the achievement of quality, safety, environmental, customer service, and financial goals, BPMs interact and manage business relationships with customers; mentor and provide direction on reports; and, communicate operational status to the Director of Operations.

BPMs work with management teams and consult with professionals such as engineers, regulators, and scientists to provide technical assistance and to plan and review projects. They determine scientific and technical goals; prepare detailed plans to accomplish these goals; and design and coordinate successive phases of testing, problem analysis, and solution proposals. They work to develop and implement policies, standards, and procedures for the technical and scientific work performed to ensure operational enhancement and regulatory compliance. They communicate with clients to explain proposals, establish specifications, present research findings, and provide status updates. BPMs must be able to communicate effectively with internal and external interdisciplinary teams. They should be able to understand, verbalize, and defend (as necessary) scientific methods, plant operations, and processes.

BPMs hire, supervise, and evaluate engineers, technicians, researchers, and other plant staff. They develop and train staff on innovative technologies and plan activities to maintain and enhance staff competencies. They coach and mentor staff, always working to promote quality, safety, and efficiencies within the plant. BPMs must strive to foster a well-trained and inspired staff by monitoring individual performance, providing specific feedback regarding strengths and areas for development, and seeking out continuous learning opportunities.
BPMs must demonstrate the ability to analyze and process high volumes of information while managing a multitude of priorities. They must be committed, diligent, approachable, passionate, meticulous, and highly accurate. They should demonstrate effective time and resource management skills, and be able to plan efficient and appropriate resource use for all plant departments and personnel.
BPMs must be critical thinkers who use logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems. They should be effective decision makers and be able to consider the relative costs and benefits of potential actions to choose the most appropriate one.

There are no specific educational requirements for BPMs though a Bachelor's degree in Engineering, Business Administration, or Science with specialization in Chemistry, Biotechnology, or Physics would be a recommended minimum. There are BPMs with Master's or Doctorate's degrees in these relevant, specialized fields. Additionally, BPMs should have an extensive track record with a minimum of 5 to 8 years' manufacturing management experience. There are a number of additional certifications and designations related to quality management, productivity, workplace safety, and project management that are desirable for prospective Biofuels Plant Managers. Courses related to lean manufacturing (e.g., Lean Six Sigma), continuous improvement (e.g., KAIZEN), and industry practices (e.g., GMPs) are widely recognized and sought in plant managers.
Possessing a firm understanding of Continuous Process, Process Improvement, Lean Manufacturing and Lean Six Sigma Principles would be an asset for BPMs, as well as experience with Process Safety Management (PSM), Management of Change, and WHMIS I and II. Training in Good Manufacturing Practices, Good Laboratory Practices, and quality management systems such as ISO, BQ 9000, or similar internationally recognized processes would also prove to be beneficial for BPMs. BPMs should have continuous-process experience (petroleum, ethanol, biodiesel, biofuel or chemical), good basic computer skills, and a strong understanding of chemical distillation, fermentation and refining, extraction or processing of grains and cellulosic biomass.

Essential Skills

The most important Essential Skill(s) for this Profile: ✓					
	Reading Text	✓	Thinking Skills – Problem Solving		Working With Others
	Document Use		Thinking Skills – Decision Making		Computer Use
	Writing	✓	Thinking Skills – Critical Thinking		Continuous Learning
	Numeracy		Thinking Skills – Job Task Planning & Organizing		
✓	Oral Communication		Thinking Skills – Significant Use of Memory		
			Thinking Skills – Finding Information		

In addition to solid technical knowledge and operational experience, BPMs need strong communication skills to manage and motivate interdisciplinary teams of staff and outside consultants as well as to interact with senior company officials and government representatives. They should have strong problem solving abilities to ensure that production issues are addressed quickly and efficiently. They also need critical thinking skills to identify priority issues from analysis of large volumes of information and to ensure that potential health, safety, environmental or financial risks are identified and managed effectively.

Language Benchmarks

Biofuel plant managers must be able to manage all aspects of a biofuels plant operations and will need an upper language benchmark of CLB 8.

Competency Profile

A Biofuels Plant Manager must be able to:

A. Manage

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
1. Provide leadership	1.1 Demonstrate integrity	
	1.2 Be accountable and hold others accountable	
	1.3 Be consistent	
	1.4 Be clear and concise	
	1.5 Be diplomatic	
	1.6 Be decisive	
	1.7 Demonstrate fairness	
	1.8 Demonstrate emotional intelligence (e.g., respond to cultural sensitivities)	
	1.9 Implement corrective actions and best practices	
	1.10 Provide team support (e.g., provide direction to the team, participate on team)	
	1.11 Lead by example	
	1.12 Supervise	
2. Develop budgets	2.1 Work with management team to develop budgets	
	2.2 Gather current costs (e.g., operating, maintenance and capital costs)	
	2.3 Evaluate past costs, as required	
	2.4 Set schedule for investment into the capital	
	2.5 Project the current expenditures, as	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	required	
	2.6 Balance expenditures against projected revenues, as required	
	2.7 Validate the budgets with direct reports	
	2.8 Submit budgets to senior management	
	2.9 Validate budgets with senior management	
3. Develop capital budget	3.1 Identify required maintenance of business and business improvement items	
	3.2 Develop cost estimates	
	3.3 Assess impact to plant operations	
	3.4 Develop business case	
	3.5 Present capital budget details to senior management	
	3.6 Validate budget with senior management to ensure alignment with organizational goals	
4. Implement financial efficiencies	4.1 Ensure operational data is accurate and can be measured	
	4.2 Analyze financial and operational data	
	4.3 Determine specific areas to target (e.g., areas of opportunity, internal benchmark)	
	4.4 Set efficiency target against benchmark	
	4.5 Prioritize areas of interest	
	4.6 Present options to senior	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	management	
	4.7 Implement decisions	
5. Interpret financial statistical data	5.1 Develop financial reports	
	5.2 Identify and explain variances to budget	
	5.3 Interpret trends of current costs against historical costs	
	5.4 Acknowledge and assess, for example: • Impact of commodity markets • Market for finished product • Greenhouse Gas (GHG) credit values	
	5.5 Put information into easily communicated format (e.g., Key Performance Indicator (KPI) report, Power Point Presentations (PPT), graphs, Gantt Chart)	
	5.6 Articulate financial performance in clear, synthesized language	
	5.7 Provide rationale to support decisions	
6. Develop policies and procedures	6.1 Understand the current regulatory and operating constraints	Workplace Hazardous Materials Information System (WHMIS) International Society for Testing Materials (ISTM) International Organization for Standardization (ISO) National Biodiesel Accreditation Program (BQ 9000) American Society for Testing and Materials (ASTM) standards Provincial occupational health and safety guidelines Worker's compensation

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
		National Fire Protection Association (NFPA) National Pollutant Inventory Report (NPRI) Environment Canada Provincial and territorial environmental standards Canadian Standards Association (CSA) Provincial labour boards and codes Privacy legislation European Standard for Quality of Fuel – EN14214
	6.2 Investigate the applicable areas	
	6.3 Develop draft policies for review by appropriate stakeholders	
	6.4 Engage staff to validate draft policies and procedures	
	6.5 Develop and implement final policies and procedures	
	6.6 Implement document controls (e.g., for policies, procedures and protocols)	
	6.7 Approve and communicate policies and procedures	
7. Implement and follow standard operating procedures (SOPs)	7.1 Develop materials for implementation (e.g., documentation)	ISO 9000
	7.2 Validate SOPs with management team	
	7.3 Communicate materials (e.g., distribute, post)	
	7.4 Communicate and train end-users	
	7.5 Monitor and enforce compliance	
8. Ensure compliance with codes, regulations and standards	8.1 Perform internal audit to ensure direct reports have appropriate	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	compliance documentation	
	8.2 Request and acquire compliance information from direct reports (e.g., department heads, managers)	
	8.3 Work with management team to analyze audit results and compliance information	
	8.4 Respond accordingly to meet compliance code, regulation and standard (e.g., adjust, update and improve materials)	
9. Set goals and objectives	9.1 Understand the corporate strategy	
	9.2 Set long-term goals (e.g., departmental, divisional) that tie into corporate goals	Self-Monitoring, Analysis, and Reporting Technology (SMART)
	9.3 Establish measureable, achievable objectives	
	9.4 Communicate goals and objectives (e.g., through progress reports, meetings, performance reviews)	
	9.5 Actively contribute to objectives, goal setting and strategic decision making	
	9.6 Evaluate performance versus established goals	
10. Maintain plant's record system	10.1 Determine what information will be retained [e.g., daily operational data such as Key Performance Indicators (KPIs), efficiencies, routine interviews]	
	10.2 Establish secure data collection systems	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	10.3 Establish the physical storage systems	
	10.4 Establish policies and procedures for access and use (e.g., limited access systems, revision systems) to ensure that data collection is in compliance with existing safety and quality rules and regulations	ISO 9001 ISO 14000 Biodiesel Quality System 9000
	10.5 Give access to hard records (i.e., uncontrolled records)	
11. Manage projects	11.1 Determine the scope and objectives	
	11.2 Develop project action plan with appropriate budget	
	11.3 Prepare project schedule	
	11.4 Present project to senior management for feedback and approval	
	11.5 Monitor and evaluate performance	
12. Coordinate contracted services	12.1 Determine the service required (e.g., products and equipment)	
	12.2 Issue tenders, Request for Proposals (RFPs) or Request for Quotations (RFQs) for selection of supplier	Note: tenders are binding legal documents
	12.3 Negotiate contract and terms of service	
	12.4 Schedule when service to be performed	
	12.5 Maintain regular, effective communication with contractor	
	12.6 Ensure compliance with policies and procedures	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	12.7 Validate completion of the service (e.g., validate that completed service, product or equipment meets organizational needs)	
13. Manage purchase orders	13.1 Establish a purchase order policy and defined procedures	
	13.2 Respond to departmental requisition requests	
	13.3 Solicit quotations and negotiate purchase orders	
	13.4 Establish a system for monitoring	
	13.5 Track and analyze purchases	
	13.6 Justify expenditures prior to authorization process	
14. Manage risk	14.1 Identify potential risks	
	14.2 Conduct gap analysis with assistance of employees	
	14.3 Establish risk mitigation programs	
	14.4 Communicate programs to employees and other relevant parties (e.g., stakeholders, senior management)	
	14.5 Assure compliance by employees and relevant parties (e.g., stakeholders, senior management)	
15. Set organizational priorities	15.1 Conduct needs analysis	
	15.2 Gather relevant information	
	15.3 Define, understand and communicate the organizational needs and expectations related to, for example: • Staff	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	• Marketing • Operations • Safety • Environment	
	15.4 Make decisions in conjunction with senior management on organizational priorities	
	15.5 Help others prioritize their work	
16. Manage and protect intellectual property	16.1 Identify proprietary information	Patent law, trademarks, copyrights
	16.2 Understand the importance of protecting proprietary information (e.g., risks associated with internal and external intellectual property and technology)	
	16.3 Identify organizational restrictions on proprietary information	
	16.4 Take measures to protect information	
	16.5 Monitor the implementation of measures to protect information	

A Biofuels Plant Manager must be able to:

B. Implement Safety and Environmental Program

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
1. Establish occupational health and safety and environmental committees	1.1 Determine the skills required of individuals on committees	Occupational health and safety requirements Municipal, provincial and territorial environmental standards Environment Canada
	1.2 Work with safety coordinator to establish the mandate and scope of the committee	
	1.3 Determine responsibilities and operations of the committee	
	1.4 Communicate duties and responsibilities of occupational health & safety and environmental committees to all staff	
	1.5 Outline required training for roles within the plant	
2. Complete hazard assessment	2.1 Understand the potential hazards	According to provincial and territorial Occupational Health and Safety (OHS) regulations Hazard Analysis and Critical Control Points (HACCP) Hazard and Operability Analysis (HAZOP)
	2.2 Identify all areas for hazard assessment	
	2.3 Identify team members who will complete the assessment	
	2.4 Engage team members in training to identify hazards	
	2.5 Conduct the assessment	
	2.6 Report assessment findings to	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	occupational health and safety and environmental committees	
	2.7 Conduct periodic housekeeping and safety inspections (e.g., monthly, biannually)	According to provincial and territorial OHS regulations
3. Develop health and safety Standard Operating Procedures (SOPs) and protocols	3.1 Review the hazard assessments	OHS Workplace Hazardous Materials Information System (WHMIS)
	3.2 Review draft SOPs with committee (e.g., Vessel Entry, Hot Work Permits)	Safe hours of work policy especially regarding 24 hr operations Provincial labour code
	3.3 Approve SOPs	
	3.4 Develop the action plan to minimize risks	
4. Develop environmental Standard Operating Procedures (SOPs) and protocols	4.1 Identify and manage environmental risks and associated impact	Municipal, provincial and territorial environment regulations Environment Canada WHMIS Material Safety Data Sheets (MSDS)
	4.2 Review and follow the corporate environmental mandates	
	4.3 Review the regulatory requirements	
	4.4 Develop the plan that captures the corporate and regulatory mandates	
	4.5 Draft SOPs with committee	
	4.6 Approve SOPs	
	4.7 Implement appropriate document controls	
	4.8 Develop the action plan and timelines	
	4.9 Implement the action plan	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
5. Implement and enforce the health and safety and environmental plan	5.1 Ensure training and compliance	
	5.2 Ensure compliance is audited	
	5.3 Discipline employees, as required	
6. Ensure access to safety equipment	6.1 Identify what equipment is required	
	6.2 Identify areas where equipment is required	
	6.3 Ensure that equipment is accessible and operational	
	6.4 Ensure training is delivered and documented	
	6.5 Ensure ongoing maintenance of safety equipment	
	6.6 Maintain logs of equipment testing and calibration	
	6.7 Implement appropriate document controls	

A Biofuels Plant Manager must be able to:

C. Maintain Human Resources

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
1. Identify human resource skills required for plant operations	1.1 Work with human resources department to conduct a skill analysis	
	1.2 Identify the number of employees required	
	1.3 Develop a skills matrix	
2. Develop and maintain organizational chart	2.1 Work with human resources department to develop and maintain organization chart	
	2.2 Review the skills matrix	
	2.3 Define the roles and reporting structure	
	2.4 Develop the draft organizational structure	
	2.5 Validate and approve organizational chart	
3. Hire employees	3.1 Work with human resources department to hire employees	Provincial labour codes and laws
	3.2 Develop job descriptions	
	3.3 Advertise and recruit	
	3.4 Work with department managers to review and interview prospective candidates	
	3.5 Select successful candidate	
	3.6 Establish confidential personnel file for new hire	
4. Implement plant training programs	4.1 Work with the human resources department, departmental managers	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	and senior management to develop and implement role-specific training	
	4.2 Develop training matrix	
	4.3 Conduct training gap analysis	
	4.4 Develop orientation program	
	4.5 Develop training program	
	4.6 Ensure scheduled training occurs	
	4.7 Maintain training records (e.g., complete and file training documentation)	
5. Develop incentive plan, as required	5.1 Work with senior management to develop incentive plans, as required	
	5.2 Establish performance baseline	
	5.3 Establish the type of program (e.g., bonus, stocks, commission)	
	5.4 Evaluate performance over specific timeline	
6. Conduct performance management	6.1 Cary out performance review according to organizational hierarchy (e.g., plant manager reviewing direct reports, department managers reviewing their reports)	
	6.2 Establish personal performance development plan	
	6.3 Conduct scheduled performance reviews on a regular basis	
	6.4 Provide feedback on strengths and areas for improvement	
	6.5 Determine incentives	Union agreements
	6.6 Evaluate performance over specific timeline	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	6.7 Provide feedback on strengths and areas for improvement	
	6.8 Determine training requirements	
	6.9 Coordinate appropriate training for areas requiring improvement	
	6.10 Maintain all performance management documents (e.g., performance appraisals) within confidential personnel file	
7. Discipline employees	7.1 Discipline employees in conjunction with the human resources department	
	7.2 Establish performance baseline	
	7.3 Identify substandard performance	
	7.4 Determine remedial action required	
	7.5 Follow disciplinary procedures	Company policies and procedures or negotiated per collective agreement
8. Build teams	8.1 Identify the team objective	Corporate goals and objectives
	8.2 Identify skills, knowledge and abilities required	
	8.3 Encourage and foster respect among team members	
	8.4 Establish team structure, roles and responsibilities and build corporate culture	
	8.5 Monitor performance of the team regarding (e.g., corporate goals, safety standards, harmony, productivity)	
	8.6 Bolster staff and team relations (e.g., through social and sporting events)	
9. Develop succession management plan	9.1 Work with human resources	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
for team	department and senior management to develop succession management plans	
	9.2 Identify key positions	
	9.3 Identify high potential employees	
	9.4 Provide opportunities for development	
10. Negotiate collective agreements, as required	10.1 Collaborate with management team to identify areas for improvements	
	10.2 Account for any outstanding grievances	
	10.3 Develop a negotiation strategy	
	10.4 Negotiate terms of agreement	
	10.5 Implement changes, as per agreement	
11. Pay staff according to contract terms	11.1 Work with human resources department to ensure staff are paid according to contract terms	
	11.2 Verify time sheets, as required	
	11.3 Assess accuracy of time sheets and take action, as required	
	11.4 Review and authorize payroll	

A Biofuels Plant Manager must be able to:

D. Maintain Quality

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
1. Implement quality standard procedures	1.1 Identify quality standards	International Society for Testing Materials (ISTM) International Organization for Standardization (ISO) National Biodiesel Accreditation Program (BQ 9000) American Society for Training and Development (ASTM) standards Total Quality Management (TQM)
	1.2 Document quality protocol	
	1.3 Communicate and train	
	1.4 Take steps to meet or exceed quality standards (e.g., regularly review quality standards to make sure that procedures meet final expectations)	
	1.5 Maintain records and control documents	
2. Maintain a continuous improvement program	2.1 Work with management team to maintain a continuous improvement program	
	2.2 Audit to verify conformance to established standards	
	2.3 Identify non-conformances	
	2.4 Develop and implement plans to address non-conformances	
3. Maintain a continuous testing program	3.1 Establish process and operations specifications	Organizational specifications ASTM standards
	3.2 Test process and operation against set specifications	
	3.3 Test product against set specifications	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	3.4 Adjust operations to be within specifications	
	3.5 Document inspection and changes in operation	
	3.6 Define corrective action reports	Corrective/Preventative Action Report CPAR
4. Maintain traceability system	4.1 Identify critical products and areas to be traced for testing	
	4.2 Develop an identification system for lots, batches and tests	
	4.3 Maintain records and control documents	

A Biofuels Plant Manager must be able to:

E. Maintain Production

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
1. Develop plant production schedule	1.1 Establish true operational capacity	
	1.2 Liaise with sales and marketing team to determine customer demand	
	1.3 Align resources to meet demand (e.g., balance customer demand to meet production schedule)	
	1.4 Develop back up plan if inventory, staff availability or significant equipment downtime occur	
2. Identify specific human resource needs, as required	2.1 Establish the skill mix needed for operation	
	2.2 Schedule human resources	
	2.3 Verify efficiency and productivity	
3. Source raw materials	3.1 Determine production requirements	
	3.2 Follow material specifications	
	3.3 Establish approved vendors	
	3.4 Negotiate terms of the deal, as determined by senior management	
4. Coordinate logistics	4.1 Establish through-put schedules	
	4.2 Determine storage capacities	
	4.3 Coordinate with long term schedule to ensure effective use of working capital	
	4.4 Ensure performance of deliveries	
5. Manage production waste	5.1 Identify production waste streams	
	5.2 Establish storage capacity for waste	
	5.3 Establish waste handling capacities	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	5.4 Train staff in waste handling	
	5.5 Establish waste distribution plan	
6. Develop continuous improvement program	6.1 Engage employees to participate	
	6.2 Involve employees in internal audits	
	6.3 Identify high impact areas for continuous improvement	
	6.4 Benchmark internal and external performance	
	6.5 Develop a user-friendly system	
	6.6 Evaluate, select and implement suggestions	
	6.7 Reward participation, as required, and as allowed by collective agreement	
	6.8 Monitor improvement	
7. Support Research & Development (R&D) activities	7.1 Evaluate suggested R&D activities	Scientific Research and Experimental Development (SR&ED)
	7.2 Generate a plan and procedures for incorporating R&D activities within the production environment (e.g., plan documentation, SR&ED)	
	7.3 Incorporate successful R&D into general operations	
	7.4 Maintain documents related to SR&ED activities	
	7.5 Offer reward for R&D input, involvement and success	
	7.6 Apply for SR&ED credits, as applicable	Revenue Canada

A Biofuels Plant Manager must be able to:

F. Maintain Facility

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
1. Define the facility and associated activities	1.1 Define footprint and geographic location of the facility	
	1.2 Define transportation infrastructure	
	1.3 Define ancillary activities in and around the facility	
	1.4 Compile inventory of facility components [e.g., Heating, Ventilating, and Air Conditioning (HVAC) system, roof, equipment]	
2. Procure equipment	2.1 Determine requirements, as per capital and operating budgets	Canadian Standards Association (CSA) Canada weights and measures National Institute of Standards and Technology (NIST)
	2.2 Determine specifications and capacities	
	2.3 Source potential vendors for proposals [e.g., through tenders, Request for Proposals (RFPs), Request for Quotations (RFQs)]	
	2.4 Negotiate terms in collaboration with senior management	
	2.5 Generate purchase order	
	2.6 Coordinate installation and commissioning of equipment, as required (e.g., install equipment, contract installation)	
3. Implement preventative maintenance	3.1 Compile list of normative references	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
schedule	for facility	
	3.2 Review operating manuals	
	3.3 Identify equipment that needs maintenance	
	3.4 Generate work order, as required	
	3.5 Generate maintenance schedule	
	3.6 Assign personnel to maintenance and repair activities	
	3.7 Maintain records, for example: • Receipts • Warranties • Make • Model • Serial number	
4. Schedule maintenance shut-downs	4.1 Evaluate production requirements	
	4.2 Identify goals of shut-down	
	4.3 Identify the people, timelines and necessary tools and equipment	
	4.4 Issue work orders, purchase orders or contract parties, as required	
	4.5 Adjust production schedule, as required	
	4.6 Ensure completion of set goals	
	4.7 Maintain control documents (e.g., maintenance records)	
5. Develop emergency response preparedness program	5.1 Establish protocol to evacuate facility (e.g., designated staging area for people to meet)	
	5.2 Appoint leads, captains and/or point	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	persons to ensure the facility areas are evacuated	
	5.3 Coordinate emergency response preparedness training and practice	
6. Assess impact of emergency shut-downs	6.1 Assess situation (e.g., mechanical or electrical breakdowns, fire, environmental non-compliance)	Provincial and federal fire code
	6.2 Stabilize the plant	
	6.3 Develop action plan to bring the plant back online	
	6.4 Develop emergency crisis plan for potential safety incidents	
	6.5 Communicate to employees and other relevant stakeholders	
	6.6 Execute action plan	
	6.7 Create emergency shut-down report	
	6.8 Conduct root-cause analysis	
	6.9 Review root-cause analysis and implement any changes required	
	6.10 Communicate emergency shut-down report findings to relevant external parties	
7. Monitor key parameters	7.1 Establish the key parameters	
	7.2 Monitor key parameters	
	7.3 Take corrective action, as required	
8. Maintain housekeeping	8.1 Establish the housekeeping standard	Occupational Health and Safety Act (OSHA) Workplace Hazardous Materials Information System (WHMIS)
	8.2 Establish housekeeping schedule	
	8.3 Provide tools and equipment	
	8.4 Monitor, evaluate and communicate	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	the status of housekeeping	
9. Maintain inventory of critical spare parts	9.1 Identify 'red line' production equipment (e.g., critical path equipment)	
	9.2 Identify the critical parts	
	9.3 Maintain an adequate inventory and/or ready access for consumable components, in line with principles of efficient use of working capital	

A Biofuels Plant Manager must be able to:

G. Communicate

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
1. Communicate effectively	1.1 Establish what information is to be communicated (e.g., to banks, media, stakeholders)	
	1.2 Communicate effectively at all levels of the organization	
	1.3 Listen actively confirming that you understand	
	1.4 Take notes to remember points	
	1.5 Recognize different personalities and points of view	
	1.6 Follow up on conversations and actions required	
2. Develop communication tools and protocols	2.1 Establish schedule of plant meetings	
	2.2 Establish communication tools and protocols, for example: • Progress reports • Pay stub notices • Update meetings • Reports • Newsletters • Bulletin board	
	2.3 Establish forum for employee participation	
3. Hold and chair meetings	3.1 Establish location	
	3.2 Establish reason and expected outcomes	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	3.3 Develop agenda	
	3.4 Set time and time limit for meeting	
	3.5 Invite participants	
	3.6 Solicit active participation from participants	
	3.7 Follow agenda to assure a sense of order	
	3.8 Document meeting	
	3.9 Establish what results are expected and responsibilities	
	3.10 Prepare and distribute meeting minutes	
	3.11 Follow up on actions	
4. Make presentations	4.1 Establish goal and objectives of presentation	
	4.2 Establish type of audience	
	4.3 Ensure presentation is relevant to the audience	
	4.4 Know your subject matter	
	4.5 Develop and practice presentation	
	4.6 Use appropriate audio-visual aids	
	4.7 Use proper voice tone and inflexion	
	4.8 Check for connection with audience	
	4.9 Establish eye contact with different members of the audience	
	4.10 Keep presentation concise and to the point	
	4.11 Solicit audience input	
5. Communicate with customers	5.1 Establish a proactive communication protocol with customers	
	5.2 Work in collaboration with account	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	managers in customer service communications	
	5.3 Observe protocol for communication with customers	
	5.4 Implement customer satisfaction measures to verify quality of service and products (e.g., survey, complaints)	
	5.5 Act as a customer advocate within the organization	
6. Communicate with vendors and suppliers	6.1 Work with management team when communicating with vendors and suppliers	
	6.2 Follow company policies and procedures for confidentiality	
	6.3 Establish a proactive communication protocol with vendors and suppliers	
	6.4 Verify provision of service or product	
	6.5 Conduct an evaluation of vendor/supplier and products or service	
7. Communicate with direct reports	7.1 Establish schedule of meetings	
	7.2 Establish standards of communication (e.g., open door policy)	
	7.3 Be responsive to employee input	
	7.4 Follow up, as required (e.g., provide rationale to staff about major decisions)	
8. Communicate with senior management	8.1 Establish and follow a continuous reporting schedule (e.g., progress reports, report cards)	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	8.2 Provide senior management with requested information, as required	
	8.3 Communicate immediately with senior management when facing potential risks or liabilities	
9. Communicate with regulatory bodies	9.1 Determine which regulatory bodies are relevant to your operation	Occupational Health and Safety Act (OHSA) Worker's compensation National Fire Protection Association (NFPA) National Pollutant Release Inventory (NPRI) American Standard for Testing Materials (ASTM) Environment Canada Canadian Standards Association (CSA) Provincial and territorial labour boards and codes Privacy legislation Municipal and provincial/territorial regulations Boiler and Vessel Service Weights and Measures Canada Excise Canada (flow meter) Ministry of Labour Ministry of Natural Resources
	9.2 Establish appropriate regulatory communication protocol (e.g., key contact person)	
	9.3 Keep current with applicable regulations and legislations	
10. Develop a communications and public relations plan	10.1 Develop and implement a public communications protocol (e.g., to identify who speaks on behalf of the plant)	
	10.2 Identify what information is to be released	
11. Represent the facility in the	11.1 Make decisions on corporate	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
community	sponsorship and donations	
	11.2 Represent the plant to appropriate organizations	
12. Network	12.1 Establish types of beneficial networks	
	12.2 Establish benefit to all members included in the network	
	12.3 Develop a rapport with people during networking events and opportunities (e.g., customer visits, conferences, conventions)	
	12.4 Share information	
	12.5 Maintain communication	
13. Exhibit sensitivity to cultural and social diversity	13.1 Demonstrate appropriate business acumen	
	13.2 Be aware of demographics	
	13.3 Be respectful of differences	
	13.4 Treat everyone fairly	
	13.5 Accommodate special needs, as required	

A Biofuels Plant Manager must be able to:

H. Develop Personal Competencies

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
1. Solve problems	1.1 Identify problems or issues	
	1.2 Involve others with expertise in problem solving exercise	
	1.3 Employ technical, scientific and management knowledge to address the problems or issues	
	1.4 Develop practical solutions to problems or issues	
	1.5 Oversee implementation of solutions	
	1.6 Assess impact of problems and solutions to operations and facility	
2. Negotiate	2.1 Separate personalities from issues	
	2.2 Research and investigate before the negotiation	
	2.3 Set goals and targets for negotiations	
	2.4 Understand limits (e.g., termination points, scope and battery limits)	
	2.5 Establish key points and your flexibility on those points	
	2.6 Break down negotiations into points	
	2.7 Control emotions	
	2.8 Document results and follow up	
	2.9 Work toward a win-win solution	
3. Delegate	3.1 Empower others (e.g., believe and trust others)	
	3.2 Recognize limitations	
	3.3 Clearly define responsibilities	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
	3.4 Clearly communicate to others what tasks have been delegated	
	3.5 Clearly communicate expectations to delegate	
	3.6 Provide support	
	3.7 Follow up while allowing sufficient latitude	
4. Use software applications	4.1 Use word processing, spreadsheet, project management software and other software applicable to the organization	
5. Use electronic communications	5.1 Communicate through email, cell phone, intranet	
	5.2 Observe appropriate electronic communication protocol	
	5.3 Participate in teleconferences and web conferences	
6. Commit to personal and professional development	6.1 Assess strengths and weaknesses	Industry-specific skills upgrading courses
	6.2 Seek opportunities for personal and professional development	
	6.3 Document participation	
7. Be decisive	7.1 Collaborate with management teams when making decisions	
	7.2 Establish relevant information	
	7.3 Identify the possible solutions	
	7.4 Consider options, suggestions and ideas that have been presented	
	7.5 Make decision to move forward	
	7.6 Monitor the outcome	

TASKS	SUBTASKS	IMPORTANT ACTIONS / PERFORMANCE STANDARDS
8. Be open to change	8.1 Be flexible and open to new ideas	
	8.2 Seek others' input	
	8.3 Maintain network with industrial community	
9. Participate as an active team member	9.1 Be involved in all aspects of the operation, as required	
	9.2 Fill in gaps, as needed	
10.Coach and Mentor	10.1 Show sincerity in mentoring process	
	10.2 Show respect for those being mentored	
	10.3 Appreciate mentee's capabilities	
	10.4 Come to the process with an open mind	
	10.5 Listen actively	
	10.6 Show empathy	
	10.7 Instil confidence and trust	
	10.8 Establish mentoring goals and objectives	
	10.9 Challenge and support those being mentored	
	10.10 Identify solutions and opportunities for those being mentored	
	10.11 Allow time for mentoring relationship to develop	
	10.12 Be flexible, open and non-judgmental	
11. Attend trade shows and seminars, as required	11.1 Be willing to represent the plant and company	
	11.2 Network	
	11.3 Gather intelligence	