



**National Occupational Standard for**  
Quality Control Analyst

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## 2 A COMPETENCY FRAMEWORK FOR INDIVIDUALS WORKING IN THE BIO-ECONOMY

### 2.1 What is a National Occupational Standard?

In Canada, National Occupational Standards are industry-developed and validated documents that identify and group tasks/competencies associated with a particular occupation. They also describe the knowledge and skills that a worker must demonstrate to be considered competent.

The former Alliance of Sector Councils (TASC) outlined 11 guiding principles for creating National Occupational Standards (NOS). NOS for the Canadian bio-economy meet all 11 principles and are developed to meet the current and future human capital management needs of the Canadian bio-economy.

### 2.2 How are we defining a competency?

We define a competency as *a set of related behaviors that describe successful performance in a designated area. It is a behavioural expression of how people integrate knowledge, skills, attributes, and attitudes to produce a value-adding result in a defined situation.*

The competency statement includes a description that integrates skills, knowledge, and actions into a sequence of activities that deliver a value-added product or service.

**Performance Indicators** is the term we use for the behaviours grouped under each competency that describe the level of mastery the incumbent role must demonstrate when executing a task.

For this project, we have organized the competencies into four categories.

**Core Competencies** are those competencies that describe the "essence of the role" — that is, they are the one to three most critical competencies that may be applicable across multiple roles in a function or job family. All levels of personnel in this function would typically share them. These competencies may also act as qualifiers that differentiate the function from other functions.

**Technical Competencies** are those competencies related to specific roles or professions that enable an individual to work, function, and succeed in that role. They address the various responsibilities that job incumbents encounter in a role. For example, a surgeon's technical competencies would encompass multiple surgical tools, techniques, and conditions that could be part of the position.

Similarly, technical competencies for a lawyer would contain various legal situations that they encounter in the context of a particular field of practice.

**Regulatory Competencies** are those competencies that describe compliance with prescribed practices and mandated obligations under applicable laws, regulations, and industry standards. They ensure that critical work processes are implemented and integrated into all work activities. They are of absolute importance where economic behaviours can impact human conditions.

**Personal/professional Competencies** are those competencies that enable an individual to be successful working with others and fulfilling their responsibilities in a work context. Personal and professional competencies are not necessarily role specific.

### 2.3 Levels of complexity of work

It is important to recognize how the complexity of work varies along an organizational continuum. At one end of this continuum is low-complexity, clearly-defined, task-driven work. At the other end of the continuum is work that is higher in complexity, not as well-defined, and requires higher-level thinking and decision-making skills and a greater degree of autonomy. Results are recognised over a longer period of time and are more difficult to assess.

Figure 1: Demonstrates how the level of complexity changes with the role responsibilities

Complexity Level	Examples of Work at Different Complexity Levels	Typical Roles/Titles
	Construct and pursue worldwide strategic plans in large corporations.	CEOs of the largest trans-global corporations
	Construct and pursue worldwide strategic plans.	C-suite executives at multi-national organizations
	Lead the accumulated impact of multiple business units.	C-suite executive at large, multi-location organizations
	Optimize the function of a single business unit or corporate support staff.	General manager; plant manager
	Manage multiple, interdependent projects; balance resources among departments.	Engineering manager
	Plan and carry out sequential projects while considering contingencies and alternatives.	Maintenance manager
	Accumulate information to diagnose and anticipate problems; proactive; notice trends.	Maintenance technician
Least Complex	Follow predefined procedures; seek help when encountering an obstacle. The ability to anticipate problems is not expected.	Maintenance labourer

We define the complexity levels within the profiles at four levels:

**Foundational** — performance focus is on the execution of procedures and tasks involving own job role.

**Operational** — performance focus includes some discretion in the planning and executing of work. The work typically includes assessing the quality of the work outcomes and taking corrective action to ensure quality.

**Specialist** — performance focus is on translating goals and standards to team members and ensuring that work done under the person's responsibility area complies with all corporate standards.

**Strategic** — performance focus is on leading work and the accumulated impact of work in an independent business unit or across a whole organization. The impact of work at this level is often not visible until the medium to longer term.

The following example illustrates the different complexity levels within a profile.

<p><b>Competency Name: Research Ethics</b></p> <p><b>Competency Definition:</b> Exercises integrity and professionalism to ensure all research is performed responsibly in keeping with the ethical principles of beneficence and nonmaleficence.</p> <p>Competence at this level is demonstrated when the <b>Research Manager:</b></p>			
Performance Indicators			
Foundational	Operational	Specialized	Strategic
Diligently follows research procedures and protocols mandated by legitimate authorities and professional organizations.	Regularly monitors own actions and decisions to ensure they align with professional and organizational values.	Holds self and staff accountable to the organization's values, ensuring compliance with the policies and procedures related to scientific ethics and rules of conduct.	Fosters an organizational culture of integrity and ethical business practices by unwavering personal example.

## 2.4 Overview methodology for the development of national occupational standards

National occupational standards were developed using a multi-step process.

Step	Description	Result/Output
1	Identify critical roles in the bio-economy through primary and secondary research.	List of 50 key roles
2	Create draft profiles with critical competencies for the roles, performance, and knowledge indicators.	Draft profiles
3	Review the draft profiles with industry subject matter experts to refine the competencies, performance, and knowledge indicators.	Reviewed profile with design inputs from industry experts
4	Further validation and review by industry via online focus group.	Validated profiles by industry experts
5	Broader validation of the draft profiles via national online surveys.	Occupational Standards validated on a national level by experts from the different sectors
6	Addition of the Essential Skills and Canadian Language Benchmark (ES/CLB) ratings.	Nationally validated NOS profiles with ES/CLB profile for each NOS

### 3 QUALITY CONTROL ANALYST COMPETENCY FRAMEWORK

#### 3.1 Competency diagram for Quality Control Analyst

Competencies		Competency Level				Competency Level Legend
		1	2	3	4	
<b>Core Competency</b>						1. Foundational 2. Operational
1	Maintain a Quality Culture					
<b>Technical Competencies</b>						3. Specialist/Manager 4. Expert/Executive
1	Quality Control Testing, Tools and Techniques					
2	Quality Management System Upkeep					
3	Quality Plan Execution					
4	Quality Audit Inspections					
5	Quality Tracking and Documentation					
6	Risk Management					
7	Usage of Digital Technologies					
<b>Industry Regulatory Competencies</b>						
8	Records and Document Management					
9	Equipment and Instrument Maintenance and Calibration					
<b>Personal and Professional Competencies</b>						
10	Fostering Collaboration					
11	Professional/Emotional Intelligence					
12	Attention to Detail					
13	Problem Solving					
14	Interpersonal Communication					

### 3.2 Definition of occupation

The Quality Control Analyst role is junior to the mid-career position. It requires an excellent understanding of the work processes related to how the products or services are produced. A person in this role typically adds value by monitoring and assessing product manufacturing or testing practices to identify critical variances that may decrease the quality of the product or data. The Quality Control Analyst also conducts routine and non-routine tests on the raw materials, products, or samples at various manufacturing stages. They are often involved in reviewing and creating new Standard Operating Procedures (SOPs) to deal with new equipment, manufacturing methods, or testing processes within the laboratory or manufacturing facility. A Quality Control Analyst will compile data, reviewing it for inaccuracies, abnormalities, or unusual trends which are reported to the appropriate parties within the required deadlines, if identified.

From time to time, staff in this role may be requested to do ad hoc investigations as part of internal or external audits in to assess the probability or confirmation of deviances or nonconformances. If Quality Control Analysts find critical deviances, they collaborate in multidisciplinary teams to reduce the possibility of a loss of product quality.

These processes relate to establishing customer quality requirements for product, service, and other relevant regulatory standards. It is essential that competency and training requirements and standard work processes are maintained in order to prove quality at the product and service levels. When suspected deviance to work processes and product and service quality is detected, the quality methodology requires review for corrective action for any deviances and elements of noncompliance. To achieve consistent quality, numerous tools and techniques like Internal Audits, Statistical Process Controls, root cause analysis, cause and effect diagrams, control charts, Pareto charts, and flow charts may be used. Quality Control Analysts are also responsible for releasing batch products or data approval after confirming the batch or data quality. Documenting product information to allow for an audit trail when and if required in the future is critical.

Quality Control Analysts may work for Canadian biotechnology organizations of different sizes and in various biotechnology areas, such as:

- Agriculture
- Aquaculture
- Bioenergy
- Bioinformatics
- Bioproducts
- Biosciences
- Environment
- Food Processing

- Forestry
- Genomics
- Health Care Laboratories
- Human and Animal Health
- Industrial
- Life Sciences
- Medical Devices
- Nanotechnology
- Natural Resources
- Nutraceuticals
- Pharmaceuticals

This role works in the following subsectors:

Applicable To	Bio-Health	Agri-Bio	Bio-Industrial	Bio-Energy

The level of complexity of the role is:

Span of Complexity Levels	Foundational	Operational	Specialist/Management	Expert/Executive

### 3.3 Level of education, training or designations requirements

Typical Education Required	Secondary	College	Bachelor	Master	PhD
Typical Starting Experience	0–5 yrs.	5–10 yrs.	10–15 yrs.	15–20 yrs.	20+ yrs.

- Relevant college diploma or bachelor's degree in related field (e.g., Science, Engineering, Environment, Mathematics, Statistics, Bioinformatics)
- OR certificate program (e.g., QA/QC in Pharmaceuticals and Food)
- One to five years of professional experience, or recent graduation from a relevant program
- Proficiency with precision measuring techniques and equipment
- Excellent analytical and problem-solving skills
- Strong knowledge of or willingness to learn current regulations about the concerned area of work
- High attention to detail while maintaining an objective overview of the bigger picture
- Ability to work under pressure with ease
- Interpersonal skills

### 3.4 Core competencies list for Quality Control Analyst

#### 3.4.1 Maintain a Quality Culture

Applies and participates in practices that systematically deliver a workplace where people are completing their work with a commitment to quality in mind and where they continuously collaborate to find and implement innovative ways to deliver products/services with higher quality while meeting quality standards.

Competency in this role is demonstrated when the individual:

- Shows support for the corporate quality improvement strategies and incorporates quality improvement goals in personal performance goals, led by management.
- Identifies and reports areas of risk regarding product quality control within the production or testing processes.
- Discusses with team how to implement new tests and or quality monitoring procedures to ensure product or data quality is maintained.
- Assists production and testing staff to implement and review product and data inspection procedures.
- Participates in identifying and reporting excellence in quality control practices to own supervisor/manager

**Knowledge required for competency at this level:**

- Understanding of teamwork/collaboration principles
- Knowledge of organization's Quality Management Systems (QMS)/Quality Improvement strategies
- Knowledge of applicable quality standards and regulations that apply to own work
- Working understanding of corporate culture development and group dynamics

### 3.5 Technical competencies list for Quality Control Analyst

#### 3.5.1 Quality Control Testing, Tools and Techniques

Knows and uses quality control and data analytical tools for the monitoring and determination of process deviations and implements corrective and preventative actions to ensure quality standards are maintained.

Competency in this role is demonstrated when the individual:

- Tests raw materials, samples, and finished and unfinished products.
- Runs acceptance sampling methods.
- Analyzes manufacturing and quality requirements.
- Plans and uses the fit for purpose information collection and analysis tools to determine process deviations.
- Collects accurate and repeatable information as input in analysis.
- Analyzes quality control test results using QC charts and date trends (e.g., Westgard rules) and provides interpreted feedback for decision making.
- Maintains documented data analysis to enable internal quality control audits.

**Knowledge required for competency at this level:**

- Knowledge of process validation techniques for quality and risk management, process control, six sigma, and ISO.

### 3.5.2 Quality Management System Upkeep

Supports and maintains a formalized system that documents processes, procedures, and responsibilities for achieving corporate goals and improving customer satisfaction.

Competency in this role is demonstrated when the individual:

- Prepares and delivers sample test plans, test cases, test scripts, and test reports for incorporation in the QMS procedures.
- Supports the implementation of the QMS by identifying problems with the QMS and collaborating with others to solve the problems.
- Assists in updating and maintaining a traceability record of the products to prove quality.
- Updates and completes product Safety Data Sheets, as required.

**Knowledge required for competency at this level:**

- Knowledge of the QMS's structure, tools, and process flow
- Knowledge of Quality System Essentials including Documents and Records Control, Process Control, Equipment, and Information Management
- Detailed understanding of the different work processes to identify and understand the different control points that require validation
- Knowledge of how to register, retrieve, and report information through the QMS
- Knowledge of applicable ISO standards/certifications
- Working knowledge of the different quality management techniques and tools

### 3.5.3 Quality Plan Execution

Uses the corporate Quality plan and objectives and agree quality targets in support of implementing the corporate quality strategy

Competency in this role is demonstrated when the individual:

- Follows the quality strategy guidelines or quality manual and consults with own supervisor to follow the correct quality control procedures that will support the quality strategy execution in the best way.

- Works in quality improvement teams to follow best practices testing and implement defect tracking tools.
- Uses and applies test traceability procedures to assist in ensuring that quality control improvement targets are realized.
- Uses prescribed test procedures in order to ensure practices meet corporate quality management standards.
- Consults with and advises product managers and teams on how to manage defects and mitigate risks through standardization.

**Knowledge required for competency at this level:**

- Knowledge of applicable quality standards and regulations that apply to own work
- Knowledge of the corporate Quality Manual and supporting documentation

### 3.5.4 Quality Inspections

Applies knowledge of quality inspection techniques to check, measure, or test one or more product or service characteristics and compares the results with the specific requirements to confirm compliance.

Competency in this role is demonstrated when the individual:

- Reviews SOPs, blueprints, and technical specifications in order to confirm and/or update acceptance criteria documentation in preparation for inspections.
- Follows test procedures to test in-process samples and final products in order to verify products are ready for release.
- Inspects how products are manufactured and/or services are delivered in order to identify and report deviances from safety regulations, accepted laboratory practices, SOPs, and good manufacturing practices (GMP).
- Coordinates the timely reporting, analysis, and resolution of nonconformances/complaints.
- Participates in the completion of recall management documentation, as required.

**Knowledge required for competency at this level:**

- Understanding of the required safety standards
- Thorough understanding of the related quality standards required
- Working knowledge of the related QMSs to understand and comply with the record-keeping and reporting requirements

### 3.5.5 Quality Tracking and Documentation

Participates in finished product quality reviews to release the product for distribution and to ensure production and shipping records are properly completed, establishing an audit trail for queries, product complaints, or product recall when and if required, with management oversight.

Competency in this role is demonstrated when the individual:

- Assists in ensuring product quality after product release by reviewing and certifying that storage and transportation requirements are complying to standards.
- Compiles final shipping documentation after confirming supplier documents prove compliance in product handling.
- Ensures and oversees that the release status information is shared with the required stakeholders.
- Ensures any deviation or investigation has been duly documented before managerial review and approval for batch disposition.
- Reviews all product data sheets and documentation to confirm that it meets internal procedures and regulatory requirements before shipment.

#### **Knowledge required for competency at this level:**

- Knowledge of corporate policies and procedures for product quality review, complaint management, document control, change control, audits, deviation investigation, and batch release
- Working knowledge of the applicable QMS requirements

### 3.5.6 Risk Management

Participates in product quality risk reviews and supports the implementation of risk mitigation strategies in order to ensure customer satisfaction through consistent product quality.

Competency in this role is demonstrated when the individual:

- Participates in risk analysis exercises to identify areas posing risks to product or service quality.
- Assists management in identifying resources and experts to participate in risk mitigation actions.
- Assists management in developing risk mitigation plans.

- Assists management in developing quality risk review plans.
- Assists management in validating the results of quality risk reduction initiatives.

#### **Knowledge required for competency at this level**

- Knowledge of risk assessment models, e.g., Failure Mode Effects Analysis (FMEA)
- Working knowledge of ISO 14791- Risk management, ICH Q9 Quality Risk Management (QRM)

#### **3.5.7 Usage of Digital Technologies**

Confidently and critically uses the full range of digital technologies for information processing, communication, and basic problem-solving in all aspects of the work.

Competency in this role is demonstrated when the individual:

- Takes initiative to adopt and master relevant technologies and software applications, as required.
- Uses digital resources to collect, analyze, and present quality information for decision making.
- Uses digital technologies to simplify information and improve communication.
- Has the ability to use and apply statistical process control principles.

#### **Knowledge required for competency at this level:**

- Fundamental knowledge and understanding of office software packages such as Microsoft Word, Excel, and PowerPoint
- Specific mastery of the different software applications used in quality control processes

## 3.6 Industry regulatory competencies list for Quality Control Analyst

### 3.6.1 Records and Document Management

Applies knowledge of the company operating processes and legal and regulatory requirements as well as Quality Management practices to ensure that all quality-related process documentation is identified, classified, controlled, revised, archived, and destroyed in compliance with requirements.

Competency in this role is demonstrated when the individual:

- Knows the document management standards and can retrieve and review the standards to ensure compliance.
- Complies with the document management procedures when compiling, distributing, and storing noncompliance and/or defect reports.
- Documents results of testing and verification procedures according to the QMS standards to ensure an audit trail.
- Ensures version control and destruction of documents are done according to the standards when procedures and standards are reviewed and updated.
- Ensures that malfunctions in equipment and instruments are tagged and findings are correctly circulated and stored to ensure reliability in test results.

#### Knowledge required for competency at this level:

- Working knowledge of ISO 2001:15 (document control standard) & ISO 13485 (applicable to the design and manufacturing of medical devices)
- Working knowledge of the Good Manufacturing Standards requirements (medical devices application)
- Working knowledge of Good Laboratory Practice (applicable where laboratory equipment is used)
- Working knowledge of Good Documentation Practices, including Data Integrity, e.g., ALCOA+ Principles (Attributable, Legible, Contemporaneous, Original, Accurate)

### 3.6.2 Equipment and Instrument Maintenance and Calibration

Ensures the availability of documented evidence that all instruments and equipment perform appropriately as per intended purpose and specifications, and that they are properly calibrated, maintained, and verified as per manufacturer recommendations and SOPs in order to ensure confidence in the verification of generated products and data.

Competency in this role is demonstrated when the individual:

- Operates various laboratory equipment such as gas chromatographs (GC), spectrophotometers (AAS, FTIR, UV-Vis), and high-performance liquid chromatographs (HPLC).
- Uses basic laboratory techniques and equipment such as pipettes, pipettors, and basic microbiology tools.
- Inspects equipment and uses only equipment that has been certified as correctly installed.
- Verifies and ensures equipment and instruments are performance qualified, if required (applicable in medical device manufacturing and applications where laboratory analysis is required for certification of product quality).
- Identifies equipment and instruments that require recertification/requalification and registers equipment for applicable maintenance procedures.
- Reviews that the internal verification of calibrations or certifications of equipment are documented and initiates procedures and schedules to ensure that they are still qualified on a continual basis.
- Has the ability to perform daily, weekly, monthly, and as needed maintenance on equipment used.

#### **Knowledge required for competency at this level:**

- Knowledge of developments in FDA regulations and policies, where applicable
- Understanding of the requirements of ISO 9001
- Understanding of the requirements of ISO 13485 (applicable for medical devices)
- Knowledge of corporate procedures for testing, maintenance, validation, and calibration

## 3.7 Personal and professional competencies list for Quality Control Analyst

### 3.7.1 Fostering Collaboration

Works effectively with others to foster trust and cooperation in the achievement of research and development (R&D) goals and project objectives.

Competency in this role is demonstrated when the individual:

- Effectively uses verbal and written communication skills to relay information and discuss the implications of inaccuracies, abnormalities, or trends.
- Relays information and discusses the implications of inaccuracies, abnormalities, or trends.
- Routinely interacts with colleagues and management to ensure alignment in R&D activities and results.
- Keeps colleagues informed on a timely basis about work progress.
- Regularly shares relevant information with the team such as data collected, analysis results, and supportive ideas and suggestions.
- Supports teams to prepare and collect samples to be analyzed on an ad hoc basis.
- Works in teams to perform verification and validation activities on equipment and manufacturing processes.
- Involves SMEs to assess products and services in order to confirm if quality was compromised or not.
- Collaborates with process owners and SMEs to implement corrective actions to reduce nonconformance incidents in future.

**Knowledge required for competency at this level:**

- Verbal and written communication skills
- Understanding of teamwork and team dynamics
- Knowledge of corporate roles and responsibilities

### 3.7.2 Professionalism/Emotional Intelligence

Applies emotional and professional sensitivity to become aware of their own emotions and those of others they interact with in such a way that they can manage personal and professional decorum and maintain productive relationships.

Competency in this role is demonstrated when the individual:

- Consistently models ethical conduct such as discretion, personal integrity, and respect for diversity in order to foster cooperation and collaboration in the achievement of organizational objectives.
- Exercises initiative to proactively address emerging, regulatory, legislative, and technical concerns.
- Works cooperatively with multiple stakeholders, demonstrating tact, diplomacy, and a willingness to consider alternative approaches or ideas that achieve results within ethical guidelines.
- Navigates effectively through personal and political agendas to avoid or overcome barriers to the organization's progress.
- Has self-awareness of own emotions and triggers and the effect on team members.
- Applies self-regulation/impulse control to deescalate emotions during periods of stress with internal and external stakeholders.
- Applies social awareness in order to understand the effects of events and conversations on coworkers.
- Applies relationship management to continuously work on optimizing productivity with team members.

**Knowledge required for competency at this level:**

- Working knowledge of the value and use of emotional intelligence within the workplace
- Knowledge of corporate Human Resources policies such as Respectful Workplace Policy and available Employee Assistance Plans/Benefits

### 3.7.3 Attention to Detail

Applies mental focus and attention to detail, ensuring their duties and work is accurate and error-free to achieve results or accomplish tasks/objectives.

Competency in this role is demonstrated when the individual:

- Applies attention to ensure work is reviewed in detail and notes are taken to use in reporting.
- Ensures all required records, analyses, and other forms of recorded information are delivered with no errors.
- Ensures all data are accurately recorded in paper and/or electronic systems.
- Ensures all source documentation is completed and maintained without omission or error at the site.
- Ensures naming conventions and filing procedures are accurately followed for study documentation.

**Knowledge required for competency at this level:**

- Demonstrable skills and ability to focus attention on detail
- Knowledge of tools and techniques to improve attention to detail

**3.7.4 Problem Solving**

Collaborates with leadership and stakeholders and uses effective problem-solving techniques to describe, analyze, quantify issues, understand their root cause(s), and develop possible solutions.

Competency in this role is demonstrated when the individual:

- Gathers all pertinent information to gain a deep understanding of the issue and its implications before communicating with management to decide on possible solutions.
- Applies systems thinking in order to understand and participate in root cause analysis.
- Applies brainstorming and other creative techniques to develop potential solutions with management oversight.
- Seeks external assistance to help develop and vet different options, and escalates the issue to management as appropriate.
- Applies quantitative and qualitative measures to recommend to management the best solutions.
- Implements management-driven solutions to mitigate the impact of actualized risks.
- Monitors the solutions during application to ensure their effectiveness with management oversight.

**Knowledge required for competency at this level:**

- Understanding of problem-solving strategies and techniques such as root cause analysis and process mapping

**3.7.5 Interpersonal Communication**

Communicates in ways that create shared understanding, generate support for the achievement of goals and objectives, and facilitate conflict resolution and problem-solving.

Competency in this role is demonstrated when the individual:

- Provides clear instructions for tasks such as completing a safety report or undertaking a specific aspect of an experiment.
- Clarifies ambiguous information through careful listening and questioning, e.g., interacting with internal staff to clarify the details of an adverse event.
- Maintains the flow of communication within a cooperative exchange even when dealing with differences of opinion.

**Knowledge required for competency at this level:**

- Working knowledge of professional and engaging communication approaches, in person and via email

### 3.8 Essential Skills for Quality Control Analyst

Essential Skills (ES) are foundational skills required for all types of work. They are not technical skills, but the core skills people need to acquire knowledge and complete workplace tasks and daily activities.

Understanding the ES requirements for a role can allow individuals to compare their skills to those required, assist training/learning providers in developing appropriate supports to ensure ES levels are developed during training, and provide employers with an additional tool for determining who/how to place in particular roles.

Human Resources and Skills Development Canada has defined Essential Skills as follows:

- Reading
- Document Use
- Numeracy, which is further divided into:
  - Money math; Scheduling, budgeting, and accounting math; Measurement and calculation math; Data analysis math.
  - Several different factors related to estimations, including the presence of a set procedure, the number of items being estimated, the consequences of errors in estimation, the amount of information missing, and the accuracy required.
- Writing
- Oral Communication

- Thinking Skills, which are further divided into:
  - Problem Solving
  - Decision Making
  - Critical Thinking
  - Job Task Planning and Organizing
  - Finding Information
  - Significant Use of Memory
- Digital Skills
- Working with Others
- Continuous Learning

Most of the ES have levels based on complexity, and a role can be analyzed to determine the appropriate levels of ES. The exceptions are noted below:

- "Working with Others" does not have a complexity rating: it simply describes the ways in which the role would be required to interact with other people, either internally within the organization or externally (i.e., with clients, customers, or the public).
- "Continuous Learning" does not have a complexity rating: it describes the types of learning expected in the context of the role (e.g., on the job, being mentored by others, formal training as part of the job, etc.).

*NOTE: as of January 2020, ESDC was undertaking a comprehensive review of ES with the intent of adding additional skills, refining existing ones (particularly digital skills) and better aligning ES with similar approaches used in other countries. However the detail was not finalized in time to be used, therefore the profiles developed for this project follow existing standards as of December 2019.*

### 3.9 Canadian Language Benchmark for Quality Control Analyst

Canadian Language Benchmarks (CLB) are a 12-point scale for task-based language proficiency descriptors which were originally developed as a guide for measuring the teaching and assessment of English as a Second Language (ESL) learners in Canada. Since they

were originally developed, the Canadian Centre for Language Benchmarks (CCLB) has continued to refine CLB, and it now includes scales for both English and French language proficiency.<sup>1</sup>

The CLB has been validated against both the Common European Framework for Language (CEFL) and the American Council for the Teaching of Foreign Languages (ACTFL) benchmarks and is considered accurate for high-stakes evaluation<sup>2</sup>.

The ES levels for Oral Communication were developed with reference to the Canadian Language Benchmarks<sup>3</sup>. Comparative work to determine the alignment between the CLB and other Essential Skills has been ongoing, with recent work providing additional alignment with the ES for Oral Communication in both spoken and listening domains, Reading, Writing, and Document Use.<sup>4</sup>

CCLB has developed a set of crossover tables that align CLB ratings with ES ratings for reading, writing oral communication and document use.

#### Quality Control Analyst ES/CLB Profile

Essential Skills	Equivalent CLB Level	ES Level				
		1	2	3	4	5
Reading	Reading: 10–11	1	2	3	4	5
Document Use	Reading: 7–8 Writing: 7–8	1	2	3	4	5
Writing	Writing: 9–10	1	2	3	4	5
Oral Expression	Speaking: 11–12 Listening: 11–12	1	2	3	4	
Numeracy	n/a	1	2	3	4	5

<sup>1</sup> Centre for Canadian Language Benchmarks. Theoretical Framework for The Canadian Language Benchmarks And *Niveaux De Compétence Linguistique Canadiens*. CCLB. Ottawa 2015. p8

<sup>2</sup> Centre for Canadian Language Benchmarks. Canadian Language Benchmarks: English as a Second Language for Adults, CCLB. Ottawa 2012 p.II

<sup>3</sup> Essential Skills Research Group. Readers Guide to the Essential Skills. ESDC. Ottawa ND. p57

<sup>4</sup> Canadian Centre for Language Benchmarks. Relating Canadian Language Benchmarks to Essential Skills: A Comparative Framework. 2015, p3

Essential Skills	Equivalent CLB Level	ES Level				
		1	2	3	4	5
Thinking Skills – Problem Solving	n/a	1	2	3	4	
Thinking Skills – Decision Making	n/a	1	2	3	4	
Thinking Skills – Job/Task Planning and Organizing	n/a	1	2	3	4	
Thinking Skills – Significant Use of Memory	n/a	Types 1,2,3				
Thinking Skills – Finding Information	n/a	1	2	3	4	
Digital Skills	n/a	1	2	3	4	5
Working with Others	n/a	See Below				
Continuous Learning	n/a	See Below				

**Explanation of the Essential Skills and the Canadian Language Benchmark for Quality Control Analyst**

**Reading: ES 3 CLB: 7–8**

Quality Control Analysts read and interpret a variety of technical documents related to production and the QMS in use, including testing protocols, regulatory requirements, audit plans, and a variety of internal quality system reports in order to determine appropriate actions in the context of their work.

**Document Use: ES 3 CLB: Reading: 7–8, Writing: 7–8**

Quality Control Analysts access and gather information from a variety of paper and electronic documents, including the creation and interpretation of data representations such as flow charts, scatter diagrams, cause/effect diagrams, etc. in order to solve problems, make decisions, or develop reports used by others. Information is accessed in standard formats, with some interpretation required.

**Writing: ES 3 CLB: 7–8**

Quality Control Analysts contribute to the writing of standardized reports related to the QA/QC function. They produce written analyses of the results of quality control testing, quality audits, and mitigation/improvement activities. They may be involved in the development of documents to provide guidance to others (generally from the production function) on quality program processes.

**Oral Expression: ES 3+ CLB: Speaking: 9–10, Listening: 9–10**

Quality Control Analysts communicate internally with production and engineering staff to relay information regarding quality variances and mitigation procedures, and take part in technical discussions with process owners and quality system personnel to troubleshoot quality issues. They may be involved in providing verbal instructions to production staff to enable them to carry out quality control tasks and implement quality system processes.

**Numeracy: ES 3 (Money Math: n/a, Scheduling, Budgeting and Accounting: 1, Measurements: 1, Data Analysis: 3)**

Quality Control Analysts perform rudimentary calculations related to money and accounting. They are required to perform more complex mathematical analysis on data collected as part of the quality management process. Specialized software is employed, but they must still understand the underlying mathematical principles in order to identify results that are outside of expected parameters.

**Thinking Skills:**

Thinking skills are subdivided into five domains:

- Thinking Skills — Problem Solving
- Thinking Skills — Decision Making
- Thinking Skills — Job/Task Planning and Organizing
- Thinking Skills — Finding Information
- Thinking Skills — Significant Use of Memory

- **Thinking Skills — Problem Solving: ES 3**

Quality Control Analysts follow a logical process for solving cause/effect problems in order to diagnose quality issues. These problems have multiple inter-related variables, where the relationship between the variables is known. A standardized process for problem solving is employed.

- **Thinking Skills — Decision Making: ES 2**

Quality Control Analysts make low-consequence decisions related to quality issues. They employ a logical process, with decision trees and historical precedence to guide the decision making process. More complex decisions are referred to more senior or experienced personnel. The impact of these decisions is known in the short term, and they are tested before implementing, so the consequences of an incorrect decision are minor.

- **Thinking Skills — Job/Task Planning and Organizing: ES 2**

Quality Control Analysts have some discretion over how they perform their work, within the framework of accepted practice within the field and company guidelines. They may be required to coordinate with other individuals within their department, and in other departments, to harmonize efforts and share resources.

- **Thinking Skills — Finding Information: ES 2**

Quality Control Analysts gather information from known and trusted sources in formats that are established through standards. They often source information from data collection systems, and may cross reference this information with tables and charts in other information sources to verify that it is within certain parameters.

- **Thinking Skills — Significant Use of Memory: Types 1, 2, 3**

Quality Control Analysts must memorize, retain, and use information through one or all of the following methods:

- Purposeful memorization of procedures, codes, parts numbers, memorization through repetition (Type 1)
- Remembering information for brief periods, e.g., minutes or hours (Type 2)
- Unique events in which learning occurs from exposure (Type 3)

**Digital Skills: ES 3**

Quality Control Analysts utilize standard office productivity software tools (Word processing, spreadsheets, presentations, etc.), electronic communication tools (email, text, instant messaging, video conferencing, etc.) and set up and use specialized data capture and analysis tools and software in the performance of their duties.

**Working with Others: Work Contexts 2, 3 & 4**

The following work contexts and functions are relevant to the Quality Control Analyst role:

- Works independently (Work Context 2)
- Works jointly with a partner or helper (Work Context 3)
- Works as a member of a team (Work Context 4)

**They may also be involved in supervisory or leadership activities, as follows: Functions 1–5**

- Participate in formal discussions about work processes or product improvement (S/L Function 1)
- Have opportunities to make suggestions on improving work processes (S/L Function 2)
- Monitor the work performance of others (S/L Function 3)
- Inform other workers or demonstrate to them how tasks are to be performed (S/L Function 4)
- Orient new employees (S/L Function 5)

**Continuous Learning: Type of Learning 1, 2, 3 How Learning Occurs: 1, 2, 3, 4, 5, 6****Type of learning may include:**

- Training in job-related health and safety (Type 1)
- Obtaining and updating credentials (Type 2)
- Learning about new equipment, procedures, products, and services (Type 3)

**The learning may occur:**

- As part of regular work activity (Context 1)
- From coworkers (Context 2)
- Through training offered in the workplace (Context 3)
- Through other forms of self-study (Context 4):
  - At work
  - On worker's own time
  - Using materials available through work
  - Using materials obtained through a professional association or union
  - Using materials obtained through worker's own initiative
- Through off-site training (Context 5):
  - During working hours at no cost to the workers
  - Partially subsidized
- With costs paid by the worker (Context 6)

## 4 REFERENCES

### Gathering the data

The development of the National Occupational Standards started with a review of existing information for the role. This review process included: referencing books, job postings, websites, articles, and BioTalent Canada's existing skills profiles to create the first draft. After several iterations via written feedback, focus groups and a national survey with subject matter experts, the National Standards were developed. The following are sources consulted during the creation of the **Quality Control Analyst** profile:

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