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Methodology for the Systematic Assessment of the Regulatory Competence Needs (SARCoN) for Regulatory Bodies of Radiation Facilities and Activities

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METHODOLOGY FOR THE SYSTEMATIC ASSESSMENT OF THE REGULATORY COMPETENCE NEEDS (SARCoN) FOR REGULATORY BODIES OF RADIATION FACILITIES AND ACTIVITIES

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IAEA-TECDOC-1860

METHODOLOGY FOR THE SYSTEMATIC ASSESSMENT OF THE REGULATORY COMPETENCE NEEDS (SARCoN) FOR REGULATORY BODIES OF RADIATION FACILITIES AND ACTIVITIES

INTERNATIONAL ATOMIC ENERGY AGENCY
VIENNA, 2019

FOREWORD

A regulatory body's competence is dependent on, among other things, the competence of its staff. A necessary, but not sufficient, condition for a regulatory body to be competent is that its staff can perform the tasks related to its functions.

The IAEA has introduced a methodology and an assessment tool — Guidelines for Systematic Assessment of Regulatory Competence Needs (SARCoN) — that provides practical guidance on analysing the training and development needs of a regulatory body and, through a gap analysis, guidance on establishing and meeting competence needs.

In 2013, the IAEA published Safety Reports Series No. 79, Managing Regulatory Body Competence, which provides generic guidance, based on IAEA Safety Requirements, for the development of a competence management system within a regulatory body's integrated management system. In 2015, the IAEA published the Methodology for the Systematic Assessment of the Regulatory Competence Needs (SARCoN) for Regulatory Bodies of Nuclear Installations (IAEA-TECDOC-1757).

This publication provides guidance on analysis of required and existing competences to identify those required by a regulatory body regulating radiation facilities and activities in order to perform its functions, and therefore the associated needs for acquiring those competences. It is complemented by SARCoN software and is to be used in conjunction with Safety Reports Series No. 79. It can also be used, in conjunction with IAEA-TECDOC-1757, by regulatory bodies regulating both radiation and nuclear facilities.

The IAEA would like to express its appreciation to all the experts who contributed to the development and review of this publication, as well as to the contributors to IAEA-TECDOC-1757 and the SARCoN software. The IAEA officer responsible for this publication was V. Kamenopoulou of the Division of Radiation, Transport and Waste Safety.

CONTENTS

1. INTRODUCTION

1.1. BACKGROUND

The establishment of a legally based, independent, fully resourced and technically competent regulatory body is a fundamental element set out in Principle 2 of the Fundamental Safety Principles [1].

The need and importance of ensuring regulatory competence is reinforced and further elaborated in IAEA Safety Standards Series No. GSR Part 1 (Rev. 1), Governmental, Legal and Regulatory Framework for Safety [2], in IAEA Safety Standards Series No. GSR Part 3, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards [3] and in IAEA Safety Standards Series No. GSR Part 2, General Safety Requirements on Leadership and Management for Safety [4].

GSR Part 1 (Rev. 1) [2] and GSR Part 3 [3] include overall requirements for responsibilities and functions of a regulatory body including staffing and competence.

Requirement 9 of GSR Part 2 [4] states that "Senior management shall determine the competences and resources necessary to carry out the activities of the organization safely and shall provide them." Also, "Senior management shall determine which competences and resources the organization should retain or should develop internally, and which competences and resources may be obtained externally, for ensuring safety." (para 4.22).

IAEA Safety Standards Series No.GS-G-3.1, Application of the Management System for Facilities and Activities [5] gives a great deal of guidance for organizations in relation to human resource management (para. 2.25) and training (para. 4.4). This will not be repeated here, but the main ideas are to:

(a) Manage the organization's knowledge for decision making, whether internally or externally sourced;

(b) Define the competence needs and ensure that the competences are available;

(c) Plan and implement the necessary training to meet present and expected future competence needs, when internally sourced.

IAEA Safety Standards Series No. GSG-12, Organization, Management and Staffing of the Regulatory Body for Safety [6] provides guidance for competence management, methods for acquiring competence and staffing of the regulatory body; the basic elements of a regulatory training programme are also included. IAEA Safety Standards Series No. GSG-13, Functions and Processes of the Regulatory Body for Safety [7] provides recommendations for meeting the requirements relevant to the regulatory body's core functions and the associated processes to implement those functions.

IAEA Safety Reports Series No. 79, Managing the Competence of the Regulatory Body [8] provides generic guidance to assist in the development of the management system of regulatory bodies by establishing, implementing, assessing and continually improving a competence management system. It provides the guidance necessary to meet the requirements to systematically assess competence needs, in the near- and longer-term future, as well as plan and deliver training and other elements of competence development. It also provides a detailed and systematic competence framework for regulatory bodies describing some sample tasks, and setting out the required competences in a four-quadrant model.

IAEA TECDOC Series No. IAEA-TECDOC-1757, Methodology for the Systematic Assessment of the Regulatory Competence Needs (SARCoN) for Regulatory Bodies of Nuclear Installations [9] provides a methodology for two essential complementary elements of the competence management process (developing competence profiles and conducting a competence gap analysis). It also establishes the relationship between the functions of a regulatory body for nuclear facilities and the competences needed for the effective performance of these functions.

Regulatory bodies who used the SARCoN methodology, as introduced in TECDOC 1757 [9], found it useful. While TECDOC 1757 [9] focuses on the competences needed for the regulation of nuclear facilities, the present technical document, derived from TECDOC 1757 [9], presents the SARCoN methodology for the regulation of radiation facilities and activities. As such, it can be used by regulatory

bodies regulating radiation facilities and activities; it can also be used, in conjunction with TECDOC 1757 [9], by regulatory bodies regulating both radiation and nuclear facilities.

1.2. OBJECTIVES

The objective of this technical document is to provide information on the use of the SARCoN methodology to support the implementation of the IAEA safety standards for ensuring regulatory competence in respect of radiation facilities and activities.

It is expected that this technical document will also support the Member States in the implementation of paras 20-22 of the Code of Conduct on the Safety and Security of Radioactive Sources [10], Article 8 of the Convention on Nuclear Safety (CNS) and Modules 3 and 4 of the Integrated Regulatory Review Service (IRRS) [11] for radiation facilities and activities.

1.3. SCOPE

This technical document provides guidance for undertaking a Competence Needs Assessment (CNA) and offers a step-by-step approach to developing competence profiles for specific regulatory tasks or positions and to analyse existing and required regulatory competences for individuals or organizational units to identify gaps, and thus competence and training needs.

It also provides examples of questionnaires for self-assessment and guidance on the development and implementation of tools and programs to fill these gaps in conjunction with Safety Reports Series No.79 [8]. The questionnaires used for SARCoN need to be tailored and adapted to the particular needs of the regulatory body.

Safety Reports Series No. 79 provides guidance on developing an adequate competence management system and contains an appendix (II) introducing the quadrant competence areas typically required for regulatory functions [8]. In this context, this technical document is aimed at supporting the process of establishing, building and maintaining competence for regulatory bodies.

A CNA is essential to ensure competent human resources as required in the IAEA safety standards. The methodology proposed in this technical document is also applicable to periodic reviews of competence needs and methods to acquire competences.

The methodology and process described in this technical document cover the regulatory functions described in IAEA safety standards and are therefore applicable to any regulatory body providing regulatory oversight of radiation facilities and activities. This methodology can be applied to all organizational levels and subdivisions in the regulatory body, from the individual, to a team, or to the organization as a whole.

The appendices and examples in this technical document can be customized to the particular needs of the regulatory body and its areas of competence within the national framework for safety. However, the competences proposed and overall information given in this technical document and its tool are in no way exhaustive and do not represent a definitive set of competence profiles.

1.4. STRUCTURE

This technical document consists of eight sections and three appendices. Sections 1 and 2 provide an introduction and brief description of overall considerations for the planning and development of competent regulatory personnel. Sections 3 and 4 introduce the four-quadrant model for regulatory competence and outline the roles and responsibilities of the personnel in charge of managing the process of developing and maintaining regulatory competence; these sections focus particularly on the role of the training coordinator and their interaction with higher management levels and technical staff of the regulatory body. Sections 5 to 8 describe a step-based procedure for developing competence profiles and identifying competence gaps in the organization. Finally, Appendices I to III present detailed examples of questionnaires and competences related to the four-quadrant model which can be used to conduct self-assessments of regulatory competence needs.

2. PLANNING FOR FUTURE STAFFING NEEDS

Proper management of recruitment, continuous learning and training requires careful analysis of the current and anticipated future needs of the regulatory body, in terms of competences. This needs to include a critical evaluation of the structure of the organization, and consideration of whether it is suitable for its functions. The analysis considers current needs, expected staff turnover (loss due to retirements and resignations), restructuring, alignment with strategies and plans, and anticipated changes in the regulatory environment. The regulatory body also has to identify those topics which in its view need to be retained 'in-house' as core activities, and any which it might delegate to other authorities, or which can be considered for self-regulation by the licensee, under suitable quality assurance arrangements.

As part of the planning process, the regulatory body needs to consider whether particular skills shortages could be better met using external resources, such as Technical and Scientific Support Organizations (TSOs), other consultants or through the secondment (or other mutual aid agreements) of staff from elsewhere, rather than by recruitment and training of its own staff.

It is also important to consider the plans in the Member State for new radiation facilities and activities.

3. THE QUADRANT MODEL OF COMPETENCES

A competence model based on a quadrant structure is described in Ref. [8]. "Each quadrant comprises a set of quadrant competence areas (QA), as illustrated in Figure 1, with each of the quadrant competence areas comprising a set of specific competences referred to as knowledge, skills and attitudes (KSAs). The quadrant model described is generally applicable to all regulatory bodies. However, the specific KSAs associated with the quadrant competence areas need to be tailored to the individual characteristics of each regulatory body and the types of facilities and activities that it regulates. This means each regulatory body needs to establish its own set of competences, assessment criteria (levels of competence) and standards for evaluation." (Section 3 of Ref. [8]).

1. Competences related to the legal, regulatory and organizational basis 1.1 Legal basis 1.2 Regulatory policies and approaches 1.3 Regulations and regulatory guides 1.4 Management system	2. Technical disciplines competences 2.1 Basic science and technology 2.2 Applied science and technology 2.3 Specialized science and technology
3. Competences related to regulatory body's practices 3.1 Review and assessment 3.2 Notification and authorization 3.3 Inspection 3.4 Enforcement 3.5 Development of regulations and guides	4. Personal and behavioural competences 4.1 Analytical thinking and problem solving 4.2 Personal effectiveness and self-management 4.3 Communication 4.4 Team work 4.5 Managerial and leadership competences 4.6 Safety culture

FIG. 1. Quadrant model of competences for regulatory bodies.

For the purposes of the present document, it is recognized that the main competences regarding two of the regulatory body's functions, namely "Emergency Preparedness and Response" and "Communication and Consultation with Interested Parties" are implicitly covered under other competences.

4. ROLES AND RESPONSIBILITIES

Analysis of the required competences and those available in the organization is a management responsibility. "At each of the three phases of an integrated management system clear responsibilities should be assigned to the individuals and units involved. Leadership and oversight for the system should be assigned to an experienced member of staff. Senior management should allocate appropriate resources to develop, implement, and maintain the integrated management system, including those needed for staff training." (para.5.10 of GSG-12 [6]).

"The regulatory body should define the organization, levels of authority, responsibilities and accountabilities for the competence management processes; an individual or a team should be appointed to be responsible for these processes." (para. 6.18 of GSG-12 [6]). The management of the regulatory body needs to assign the responsibilities for applying the Systematic Approach to Training (SAT). Depending on the size of the regulatory body, these responsibilities can be shared by various staff, or assumed by a dedicated Human Resources or Training unit. For the purposes of this document, it will be assumed that these responsibilities are exercised by a "training coordinator" (TC) as introduced in [8].

4.1. TRAINING COORDINATOR (TC)

Typical tasks and responsibilities of the TC include:

(a) Planning the competence analysis;

(b) Briefing the management and staff on the conduct of the competence analysis, explaining the meaning of the questionnaire and how to use it;

(c) Organizing and supervising the implementation of each step of the competence analysis;

(d) Using the results of the required competences to establish competence profiles;

(e) Using the result of the existing competences to compare it to the competence profiles;

(f) Using the results to quantify the number of staff corresponding to each gap;

(g) Considering how to fill the gaps by training, recruitment, reorganization, and outsourcing, and through knowledge networks;

(h) Reporting the results of the analysis and recommending means to fill the gaps to the regulatory body's management;

(i) For those gaps to be filled by training, developing a training programme in consultation with other staff and management;

(j) Supervising the implementation of the training programme;

(k) Evaluating the training results;

(l) Suggesting future training actions or alternative measures to ensure regulatory competence in the short, medium, and long term.

The TC may use this technical document for the competence needs assessment.

4.2. MANAGERS

In order to develop and enhance a regulatory body's competence to achieve its mission objectives with efficiency and effectiveness, senior management needs to be committed to ensuring that the regulatory body has and maintains competence appropriate to its needs. Since learning is a lifelong process, management needs to be committed to the ongoing development of a professional, competent, versatile and motivated workforce.

Each manager needs to be made accountable for all aspects of the competence building of their staff, be familiar with the CNA process and fully support the competence analysis. Managers need to foster an

organizational culture which supports individual staff members to recognize that they are accountable for the development of their own competence and contribute to the development of the competence of the organization as a whole.

Managers are also responsible for developing competence profiles and overseeing their staff during the self-assessment process. Managers need to discuss the self-assessment results with their staff to ensure a coherent understanding of the process and the assessment criteria, and to help ensure their consistent application.

"The management system should assign responsibility to achieve the organization's objectives and should empower the individuals in the organization to perform their assigned tasks." (para. 2.11 of GS-G-3.1 [5]).

4.3. STAFF

The role of the staff is to conduct an honest self-assessment of their existing competences. This very important task will enable the regulatory body to identify competence gaps and plan training activities effectively, in consideration of present and future needs.

The staff also have the responsibility to discuss the results of their self-assessment with their managers to identify any actions needed to improve their competence, in coordination with the TC.

5. LEVEL OF COMPETENCE – EVALUATION CRITERIA

Safety Reports Series No.79 [8] recommends an approach that uses three different levels of competence (High, Medium and Basic) which are complemented by 'Not Applicable' (NA) and 'None'. 'Not applicable' may be used in cases where the competence area is not required for the task or the position. 'None' may be used during the self-assessment in cases where no or low level of competence exists. This may be the case where new fields of competence are being developed or for newly recruited or junior staff.

The evaluation criteria need to be agreed by the senior management before the start of the analysis. These are defined as:

(a) Basic: General competence in the area concerned;

(b) Medium: A competence level sufficient in routine cases;

(c) High: A competence level required for more complex cases or at the strategic level within the regulatory body.

While the descriptions of the different levels of competence need to be communicated to the staff before their self-assessment, the level of competence required to perform certain tasks or activities is not to be communicated to staff ahead of time. This is to avoid bias when staff perform a self-assessment of their own tasks and activities.

A regulatory body may decide to use more than three levels and might choose different and more specific definitions. In fact, regulatory bodies are encouraged to adapt these definitions to their national needs, making sure that these definitions are specific, measurable, attainable and relevant. It is very important to have a common understanding of the criteria within the organization. More specific definitions of the criteria for evaluating the levels of competence, which have been successfully used for conducting SARCoN, are provided for each quadrant area in Appendix III.

The definition of the evaluation criteria takes into consideration the fact that the depth of knowledge required for a task is not necessarily related to the hierarchical position. While the highest level of technical knowledge is needed at the staff level, managers are not expected to have an equivalent in-depth knowledge of technical topics but only an overall understanding of them.

6. TASKS AND POSITIONS

This section describes some terms that will be used in this technical document hereafter [9]:

(a) A task is a measurable, assigned piece of work often to be completed within a certain timeframe. It can be split into sub-tasks.

(b) A position refers to a generic post of employment which may be assigned to multiple staff, as necessary. These positions consist of multiple tasks which are typically recorded, amongst others, in the job description of every staff of the regulatory body as required by the IAEA safety standards. In established regulatory bodies this may already be the case and the tasks are identified in the management system documentation.

(c) Each position has a job description, which typically contains the following information:

    i.   Job title;
    ii.   Purpose of the job;
    iii.   Name of the organization;
    iv.   Organizational structure;
    v.   Position in the organization;
    vi.   Lines of reporting;
    vii.   Duties and authorities;
    viii.   Key tasks and responsibilities;
    ix.   Accountability;
    x.   Necessary minimum training;
    xi.   Necessary qualifications;
    xii.   Necessary knowledge, skills and abilities;
    xiii.   Necessary education;
    xiv.   Necessary experience;
    xv.   Necessary medical fitness (para. 2.62 of GS-G-3.1 [5]).

Job descriptions can be developed for "families" of positions or for individual positions as the case may be. They can be an excellent way for managers to communicate expectations, responsibilities, authority and interfaces to staff, and serve as a useful tool to assess individual performance and identify continuous learning and training needs (para 2.61 of GS-G-3.1 [5]).

7. COMPETENCE NEEDS ASSESSMENT (CNA)

A competence needs assessment (CNA) addresses required and existing competences of an organization and can therefore be very useful to develop a training programme or expand or refocus an existing programme. It is noted that a CNA may require extensive effort in terms of resources and time.

The processes related to CNA are applicable at all organizational levels. The mission and functions of the organization need to be identified at the start of the CNA and documented in accordance with GSR Part 2 and include the elements stated therein:

"The documentation of the management system shall include as a minimum: policy statements of the organization on values and behavioural expectations; the fundamental safety objective; a description of the organization and its structure; a description of the responsibilities and accountabilities; the levels of authority, including all interactions of those managing, performing and assessing work and including all processes; a description of how the management system complies with regulatory requirements that apply to the organization; and a description of the interactions with external organizations and with interested parties."(para. 4.16 of GSR Part 2 [4]).

Regulatory bodies may have different approaches to competence management. SARCoN allows tailoring of the competence needs assessment to the organization by providing an approach that can be followed at different levels and for either the individual and/ or the organization depending on various factors including:

(a) The regulatory mandate, approach and legal framework;

(b) The vision, mission and goals of the organization;

(c) The types of facilities and activities being regulated;

(d) The organizational structure and management system.

Before starting the assessment, the organization needs to establish the level and basis for the assessment.

SARCoN can be conducted on an individual or organizational level using either the quadrant areas (QAs) or the specific KSAs as shown in Table 1. The regulatory body is usually comprised of organizational units, such as sections, divisions or departments. An organizational unit is normally in charge of performing a number of tasks.

Table 1. possible approaches to SARCoN

No.	Level	Basis
1	Organizational	Quadrant areas (QAs)
2	Organizational	KSAs
3	Individual	Quadrant areas (QAs)
4	Individual	KSAs

8. COMPETENCE NEEDS ASSESSMENT PROCESSES

The competence model described in this section suggests a basis for assessing competence needs for both the near and the medium future. Figure 2 illustrates a step based approach to CNA. A more detailed figure for the practical application of the steps is given in Appendix I.
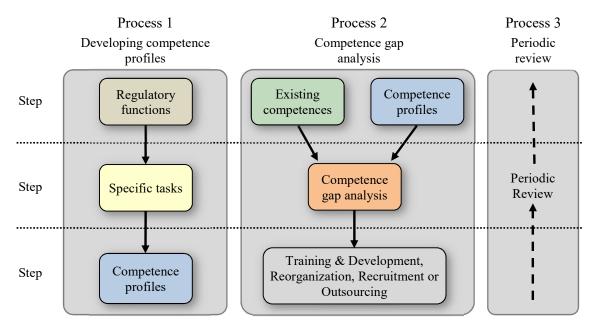
FIG. 2. The step based approach.

8.1. PROCESS 1: DEVELOPING COMPETENCE PROFILES

Competence profiles may have multiple purposes and benefits. They may be useful to the regulatory body during the recruitment process or when outsourcing competence to TSOs.

The steps involved in the development of competence profiles are outlined below. If the regulatory body has a management system in place in accordance with IAEA safety standards [4, 5] steps 1 and 2 will already have been completed as part of the management system, and the process can begin at step 3. In the absence of a management system, steps 1 and 2 will need to be completed first.

8.1.1. Step 1: Determine the regulatory functions of each unit

The organizational mandate considers current needs, as well as future plans of the organization. In order to perform its regulatory functions, a regulatory body needs to establish an organizational structure which is usually documented under the management system (at level 1[1]) as shown in Figure 3 (see para. 2.52 of GS-G-3.1 [5]).

One unit may focus on one or more of these regulatory functions. The list of units is presented with corresponding functions even if the unit does not yet exist. All anticipated needs are accounted for in the development of competence profiles and training programmes, including the continuing development needs of established staff and managers.
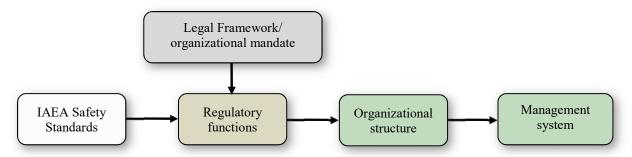
FIG. 3. Determining the regulatory functions.

Requirements are established and recommendations are provided in IAEA safety standards such as GSR Part 1 (Rev.1) [2], GSR Part 3 [3], GSG-13 [7] and GSG-12 [6], on the regulatory functions of the regulatory body. As described in these standards, the core functions and responsibilities of the regulatory body are:

(a) Development and/or provisions of regulations and guides;

(b) Regulatory review and assessment;

(c) Notification and authorization, including registration and licensing;

(d) Regulatory inspection;

(e) Enforcement;

(f) Emergency preparedness and response;

(g) Communication with interested parties.

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[1] GS-G-3.1 recommends a "three level structure of information promotes clarity and avoids repetition by establishing the amount of information and the level of detail appropriate to each type of document and by using cross-references between specific documents at the different levels" (para 2.52 [5]). "Level one should provide an overview of the policies and objectives of the organization and should describe the management system that addresses the requirements that apply to the organization's work" (para 2.53 [5]).

As mentioned in Section 3, and in order to be consistent with the methodology introduced in TECDOC-1757 [9], it is recognized that the main competences regarding two of the regulatory body's functions listed above, namely Emergency Preparedness and Response and Communication and Consultation with Interested Parties are implicitly covered within the full set of competences.

Functions supporting the discharge of the regulatory mandate are:

(a) Administrative and corporate support;
(b) Legal assistance;
(c) External expert support;
(d) Advisory committees;
(e) Research and development;
(f) Liaison with other organizations;
(g) International cooperation.

Every person in the regulatory body need to understand the functions and the management system of the organization.

8.1.2. Step 2: Determining the specific tasks

An organizational unit's function determines the tasks required to fulfil its responsibilities. Each task requires a certain competence in each quadrant area in terms of knowledge, skills, and attitudes (KSAs). The quadrant model of competences presented in Figure 1 and the KSAs in APPENDIX III provide a general compilation of competences based on the regulatory functions and experience from Member States, which can help identify the competences needed.

Figure 4 below shows the relationship between step 1 and step 2 (see APPENDIX I). The regulatory functions to be fulfilled, as identified in step 1, together with the organizational structure will serve as a basis to identify the required tasks.
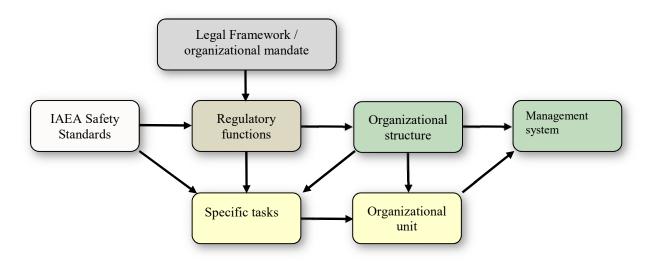
FIG. 4 Determining specific tasks for the organizational units.

Appendix I of Ref. [8] shows a list of sample tasks and associated quadrant competence areas for the core regulatory functions. In cases where tasks are not yet identified and documented in the management system, this needs to be completed before continuing this assessment.

Within each organizational unit, individual staff members will be assigned a number of tasks, varying in complexity. In order to determine the competence requirements for individuals at all levels these tasks need to be very clear and understandable [5].

Table 2 gives an example of a template for recording tasks for the whole organization. It is important to identify the affiliation of the tasks to the organizational unit. Some tasks might be affiliated to multiple units.

Table 2. Example of a template for a list of tasks

	List of tasks for the organization	Lead organizational unit	Support organizational unit	Comments
TA001	Undertake inspections of authorized parties in the medical sector to verify compliance	Medical inspection Unit	Radiological licensing Unit	
TA002	Developing guidance on the design of diagnostic medical facilities using ionising radiation	Regulatory advice Unit	Radiological licensing Unit and Medical inspection Unit	
TA00n				

8.1.3. Step 3: Developing competence profiles

This step consists of three parts that can be conducted consecutively or separately:

(a) The first part consists of assessing the required level of competences for each task based on quadrant areas or KSAs (Section 8.1.3.1);

(b) The second part consists of assigning tasks to positions (Section 8.1.3.2);

(c) The third part consists of assigning positions to individuals or to organizational units (Section 8.1.3.3).

8.1.3.1. Assessment of required competences for tasks

In this part supervisors and/or managers specify the level of competence required to perform the tasks, paying close attention to the defined levels of competence (evaluation criteria) (see Section 5). This can be done at the level of the quadrant areas (see APPENDIX II) or the specific KSAs provided in APPENDIX III as outlined in Section 7. This compilation of competences need first to be adapted to the situation of the regulatory body, and adjusted taking into account the tasks identified in step 2. This is a time-consuming exercise that may be more effectively performed by a team.

(a) On the basis of quadrant areas:

Table 3 provides an example of a template for recording the level of competence for the tasks, based on the quadrant areas. The managers responsible for conducting the assessment need to have a thorough understanding of each quadrant area. It is recommended to look at the list of KSAs (Appendix III) before commencing the assessment for the quadrant areas.

Table 3. Example of a template for recording the required level of competence for each task on the basis of the quadrant areas

	Quadrant Area	Level of competence for tasks on the basis of the quadrant areas				Comments
		TA001	TA002	TA003	…	
Q1	1.1	M	M	Level of competence		
	1.2	M	H	Level of competence		
	1.3	M	H	Level of competence		
	1.4	M	M	Level of competence		
Q2	2.1	M	M	Level of competence		
	2.2	M	M	Level of competence		
	2.3	H	H	Level of competence		
Q3	3.1	M	H	Level of competence		
	3.2	B	M	Level of competence		
	3.3	H	B	Level of competence		
	3.4	M	B	Level of competence		
	3.5	B	B	Level of competence		
Q4	4.1	M	M	Level of competence		
	4.2	M	M	Level of competence		
	4.3	H	M	Level of competence		
	4.4	M	B	Level of competence		
	4.5	B	B	Level of competence		
	4.6	M	B	Level of competence		

(b) On the basis of knowledge, skills and attitudes:

Table 4 provides an example of a template for recording the required level of competence for each task of the regulatory body based on the KSAs. Developing competence profiles on this basis gives a more detailed overview of the competences within the organization.

Table 4. Example of a template for recording the required level of competence for each task on the basis of KSAs

KSAs	TA001	TA002	TA003	…	Comments
KSA001	Level of competence	Level of competence	Level of competence	…	
KSA002: Understanding of legal basis	M	B	Level of competence		
KSA003: Ability to identify information to be considered in drafting or amending regulations/guides	B	H	Level of competence		
KSA00n	…	…	…	…	

8.1.3.2. *Assessment of required competences for positions*

The assessment of required competences for positions can be conducted after the previous part (Section 8.1.3.1), by assigning tasks to positions, or directly after step 2. This allows for a faster process but results in loss of depth of the assessment.

Tables 5 and 6 give examples of templates for recording the tasks and required competences for different positions.

Table 5. Example of a template for recording the tasks for generic positions

Positions	Task Number							
001: Senior medical inspector	TA001	TA005	TA006	TA009	TA010	TA011	TA020	
002: Junior level inspector (industrial)	TA005	TA014	TA006	TA008	TA012	TA009	TA015	
Position00n	…	…	…	…	…	…	…	…

Table 6. Example of a list of required competences for the tasks of position001 in KSA001

Position001 (Senior medical inspector)	TA001	TA005	TA006	TA009	…	Total
KSA001	H	M	M	B		H

When assigning tasks to positions, every task has a certain level of competence for one KSA or one QA. The required level of competence for a certain KSA or QA will be the maximum value of all of the assigned tasks, as shown in Table 6. It is also possible to record the required level of competence in the job descriptions of each position (see Section 6).

After assigning tasks to positions and determining the required level of competence for each QA or KSA related to a position, the following tables can be established either on the basis of QAs or KSAs.

Table 7. Example of a template for recording the required level of competence per position on the basis of quadrant areas

	Quadrant Area	Level of competence for positions on the basis of the quadrant areas				Comments
		Position001	Position002	Position003	…	
Q1	1.1	M	B	Level of competence		
	1.2	M	B	Level of competence		
	1.3	M	M	Level of competence		
	1.4	M	M	Level of competence		
Q2	2.1	M	M	Level of competence		
	2.2	M	M	Level of competence		
	2.3	H	M	Level of competence		
Q3	3.1	M	M	Level of competence		
	3.2	B	M	Level of competence		
	3.3	H	B	Level of competence		
	3.4	M	B	Level of competence		
	3.5	B	B	Level of competence		
Q4	4.1	M	M	Level of competence		
	4.2	M	M	Level of competence		
	4.3	H	M	Level of competence		
	4.4	M	B	Level of competence		
	4.5	B	B	Level of competence		
	4.6	M	B	Level of competence		

Table 8. Example of a template for recording the required level of competence per position on the basis of ksas

KSAs	Position001	Position002	Position003	…	Comments
KSA001	Level of competence	Level of competence	Level of competence	…	
KSA002	M	B	Level of competence		
KSA003	B	H	Level of competence		
KSA00n	…	…	…	…	

8.1.3.3.   Competence profiles at organizational level and individual level

Developing competence profiles for the organization offers the regulatory body the advantage of being aware of all the competences required for the specific organizational units. It may also help in the processes of identification, acquisition, use, sharing and preservation of knowledge relevant to the regulatory body. Tables 9 and 10 are provided as examples.

Table 9. Example of a template for recording the required level of competence for each unit on the basis of KSAs

KSAs	Unit001	Unit002: Medical Inspection Unit	Unit003; Regulatory Advice Unit	…	Comments
KSA001	Level of competence	Level of competence	Level of competence	…	
KSA002	M	H	Level of competence	…	
KSA003	B	H	Level of competence	…	
KSA00n	…	…	…	…	

Table 10. Example of a template for recording the required level of competence for each unit on the basis of the quadrant areas

Quadrant Area	Unit001	Unit002: Medical Inspection Unit	Unit003: Regulatory Advice Unit	…	Comments
QA1.1	Level of competence	Level of competence	Level of competence	…	
QA1.2	M	H	Level of competence	…	
QA1.3	B	H	Level of competence	…	
QA1.n	…	…	…	…	

Developing competence profiles on the individual level gives a more explicit and detailed picture of the required competence. It also provides additional information for recruitment and reorganization of competence. When the tasks of a position change or additional tasks are assigned, the competence profiles need to be adjusted accordingly. Example templates are provided in Tables 11 and 12.

Table 11. Example of a template for recording the required level of competence for individual staff members on the basis of KSAs

KSAs	Staff001	Staff002: Joe Bloggs	Staff003: Mary Bloggs	…	Comments
KSA001	Level of competence	Level of competence	Level of competence	…	
KSA002	M	H	…	…	
KSA003	B	H	…	…	
KSA00n	…	…	…	…	

Table 12. Example of a template for recording the required level of competence for individual staff members on the basis of the quadrant areas

Quadrant Area	Staff001	Staff002: Joe Bloggs	Staff003: Mary Bloggs	…	Comments
QA1.1	Level of competence	Level of competence	Level of competence	…	
QA1.2	M	H	…	…	
QA1.3	B	H	…	…	
QA1.n	…	…	…	…	

8.2. PROCESS 2: COMPETENCE GAP ANALYSIS

The competence gap analysis enables the regulatory body to compare existing competences of its staff to the required competences. The regulatory body can then identify options to address the gaps, such as training, redeployment, outsourcing or reorganization.

8.2.1. Step 1: Determining the existing competence levels

While it is recognized that many regulatory bodies have in place a process for continual performance assessment and review of training needs, it is important that for each quadrant or KSA some type of self-assessment of competences need to be completed as part of this process. This is done using the definitions of the levels as described in Section 5, with guidance but without knowing the required levels, to avoid bias. The manager needs to ensure coherency of the self-assessments and discuss the results individually with their staff.

This exercise can be performed also at the level of the organizational units. An assessment of the existing level of competence for each QA or KSA needs to be performed by the Head of unit.

All the staff of the Regulatory Body performing any of the core functions need to have basic knowledge of all the four quadrants presented in Figure 1. However, depending on the specific function of the individual or unit under assessment (e.g., drafting regulations or conducting inspections), one or more of the quadrants might be more important and a higher level of competence required (e.g., quadrant 1 related to Legal basis or quadrant 3 related to Regulatory practices).

8.2.2. Step 2: Competence Gap Analysis

Step 2 involves comparing existing KSAs (or QAs) against required KSAs (or QAs) to identify gaps.

The following figures show an example of the gap chart for each of the four quadrants and details for quadrant area 1.1 (Legal basis).

In Figure 5, the green line indicates the gap between the existing and required competence. It is noted that, gaps where the existing level is higher than the required level are not counted as gaps.

Example of a job position: QUADRANT1 - 1.1 Legal basis
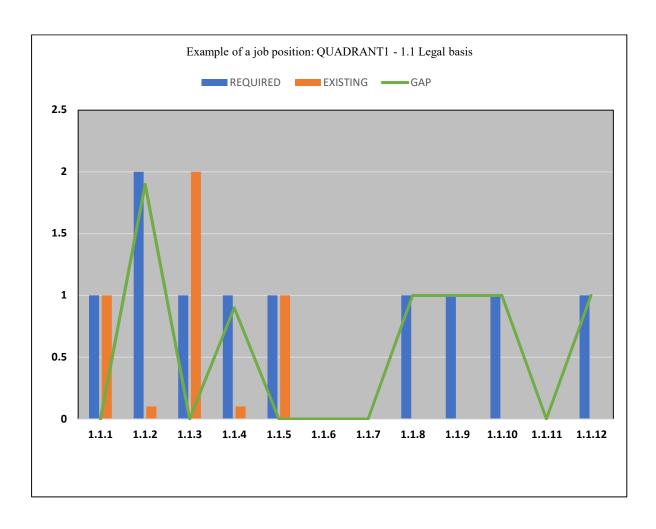
FIG. 5. Example of a gap analysis result (horizontal axis indicates the quadrants or quadrant areas and the vertical axis refers to the value of the level of competence, whereas 0 is equivalent to NA, 1 to Basic, 2 to Medium and 3 to High).

Example of a job position:Overall Summary
(Average gap per Quadrant)
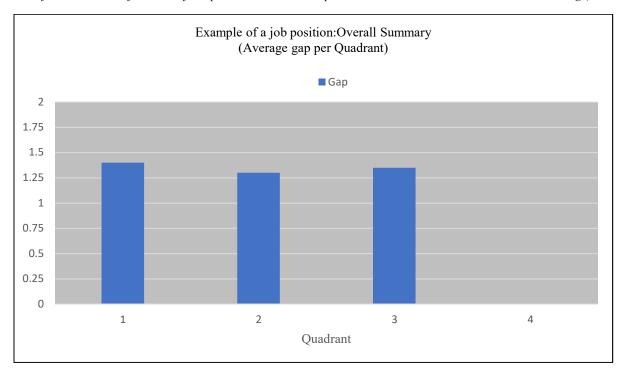
FIG. 6. Chart example of a gap analysis result (the scale of the vertical axis shows the size of the gaps, where 2 represents the biggest gap and 0 indicates no gap).

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The TC and managers analyse the gaps for each individual staff or each organizational unit, comparing the existing competence against the required competence profiles in order to understand the extent and areas of competence gaps. This needs to be done for each organizational unit.

The IAEA has produced a software tool[2] (SARCoN) to assist in the implementation of the approach described above. This is useful in gathering and analysing information on current competence versus required competence and conducting the gap analysis.

The software tool includes a comprehensive question set to identify KSA gaps in each of the quadrant competence areas of the four-quadrant model outlined in Section 3. It also automates the gathering and processing of data.

8.2.3. Step 3: Prioritization of the gaps and determining methods to fill them

Management and the TC prioritize the gaps according to their importance to the regulatory functions and take appropriate measures to fill the gaps, such as training, reorganization, recruitment, and outsourcing, as shown in Figure 1. Safety Reports Series No. 79 [8] provides generic guidance on methods of acquiring competence. Managers and the TC need to assess whether the gaps are due to a lack of competence or a lack of workforce, as this helps to determine further actions.

The self-assessment results enable the regulatory body to evaluate their staff against each competence profile and the associated required level of competence.

8.2.3.1. Establishing training and development programmes

Learning is a lifelong process. Organizations need to be committed to the training and development of their employees in order to enhance the efficiency and effectiveness of their operations, achieve their mission objectives and permit the ongoing development of a professional, competent, versatile and motivated workforce. In this respect, "As an essential element of the national policy and strategy for safety, the necessary professional training for maintaining the competence of a sufficient number of suitably qualified and experienced staff shall be made available." (para. 2.34 of GSR Part 1 (Rev.1) [2]).

If the gap can be filled by training and development, the TC and the managers have to perform a training needs assessment (TNA) and develop a training and development programme accordingly.

The results from SARCoN can be used to establish a training programme using the systematic approach to training (SAT). "The systematic approach for training (SAT) is recognized as a model for assisting in identifying the training needs and for designing, planning, implementing and evaluating training programmes. It has been used in the last 20 years by several regulatory and government agencies, as well as several other organizations." (Appendix III of [8]).

SAT consists of five interrelated phases which are explained in Safety Reports Series No. 79 [8]. These phases are:

(a) Analysis;
(b) Design;
(c) Development;
(d) Implementation;
(e) Evaluation.

Training needs and learning points related to specific competences are converted to learning objectives, including evaluation strategies, which are then organized into training plans, taking into account the available options and methods for training. These will be determined by factors such as the geographical location of the participants, availability of leave for training purposes, and the costs and availability of equipment and materials.

Possible training modes include:

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[2] It is available at http://www-ns.iaea.org/training/ni/SARCoN.asp?s=100&l=103#1222

(a) Internal classroom training;
(b) External classroom training;
(c) Distance learning, using manuals, computers and videos, among others;
(d) On-the-job training (OJT);
(e) Structured self-study;
(f) Laboratory training, such as instrument use;
(g) Coaching and mentoring.

These methods of training are identified and explained in more detail in Appendix IV of Safety Reports Series No.79 [8].

The results of the application of SARCoN can be used by the management and the TC to help develop initial annual training programmes for different positions within the regulatory body, according to the following methodology:

(a) Choose the method for acquiring competence for each KSA [8];

(b) Identify and assess the training needs (TNA) from the CNA results if training is chosen to fill the gap;

(c) List the training courses and materials available from within the organization or external sources, such as IAEA[3] and regional networks, and map them to the KSA of the quadrant model;

(d) Define the objectives of the training activity to be organized;

(e) Identify the possible training modes for each KSA;

(f) Prioritize the gaps, taking into account the strategic priorities of the regulatory body;

(g) Select the appropriate training activities to fill the gaps as prioritized in step 6;

(h) Establish individual training programmes which may be implemented through various training modes.

8.2.3.2. *Reorganization*

If the self-assessment results show that the gaps might be addressed through staff movement or internal reorganization, then staff whose qualifications fit better for a different position or in a different unit can be reassigned.

8.2.3.3. *Outsourcing (use of external support)*

The regulatory body may decide to obtain technical or other professional advice or services from outside sources, as necessary in support of its regulatory functions. A broadly used approach is to use the services of a technical support organization (TSO). In any of these cases, competence profiles can be used to specify the outsourced competence needed. It is important to have at least one senior expert within the regulatory body who is well versed in the subject matter to serve as a 'knowledgeable customer'. The regulatory body needs to have sufficiently qualified staff to specify, monitor and evaluate the work of the TSO [8].

8.2.3.4. *Participation in knowledge networks*

"An important method for acquiring knowledge and developing competence is the participation in knowledge networks. The IAEA, as well as other international organizations, and professional bodies and associations facilitate networking, exchanging information and mutual learning based on good practices and experience from different States" (Section 5.2. of Ref. [8]). Ref. [8] provides more details on this topic. National organizations can also facilitate networking.

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[3] Information on training materials offered by the IAEA can be found at:
http://www.iaea.org/Publications/Training/index.html and
http://www-ns.iaea.org/training/ni/materials.asp?s=100&l=75.

Most regulatory bodies have a recruitment policy. The knowledge and experience levels of potential staff can vary, but most jobs would require a qualification in some relevant technical specialities. Examples of specialities can be found in APPENDIX III. IAEA publications do not make particular recommendations on matters such as entrance qualifications and prior experience of recruits to the regulatory body. Each Member State may establish its policy according to its own needs and national circumstances, such as salary levels, training resources needed to attract and retain high quality staff.

It needs to be a systematic recruitment process, which may include, for example, recruitment at universities and technical institutes, through technical societies and their publications and general advertisement of openings in various media.

Regardless of the knowledge or experience of new staff members, some training will be required to introduce them to the organization and prepare them to assume their new position.

8.3.   PROCESS 3: PERIODIC REVIEW AND ASSESSMENT

Circumstances, such as introduction of novel technologies, changes in regulated facilities and activities, changes in the legal framework, reorganization, assignment of new regulatory functions and recruitment of new staff, may make it necessary to repeat the CNA process either for the whole organization or for affected parts.

In addition, a periodic review of the measures taken to address the findings of the original CNA need to be conducted in order to monitor their progress and assess their effectiveness, and to ensure that they are still valid.

The periodicity for conducting SARCoN depends on many factors, such as the resources of the regulatory body and the circumstances mentioned above.

APPENDIX I PROCESS DETAILS FOR THE PRACTICAL APPLICATION OF SACRON
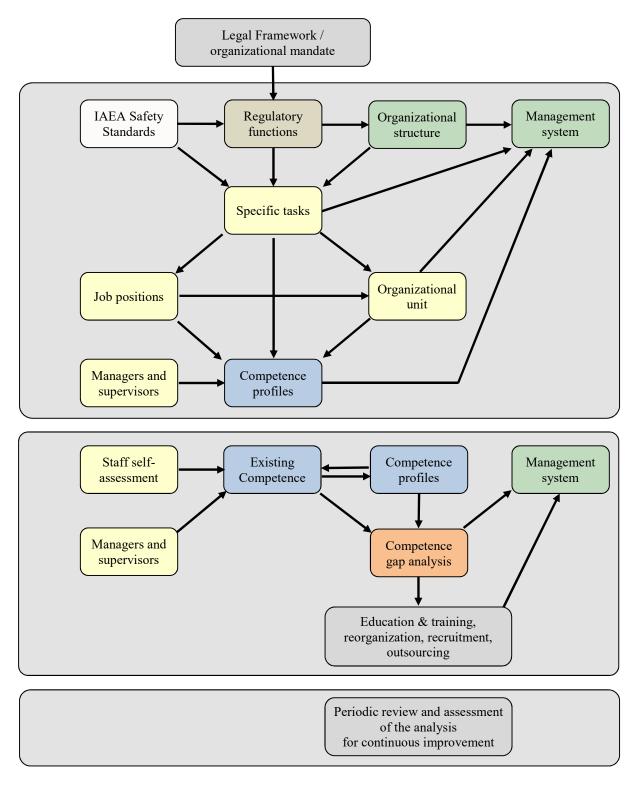
FIG.7. Details to the step-wise approach.

APPENDIX II QUADRANT COMPETENCE AREAS TYPICALLY REQUIREDFOR REGULATORY FUNCTIONS

Table 9 and Table 10 of this Appendix (reproduced from Ref. [8]) provide an example of possible links between the functions of the regulatory body and the quadrant competence areas based on expert judgement. This link is useful to develop an initial overall picture of the quadrant competence areas required to perform the functions of the regulatory body before going into the detailed analysis of tasks and KSAs.

Table 9 provides the quadrant competence areas required to perform the core regulatory functions, while Table 10 provides the same for some additional functions that might be assigned to a regulatory body.

It is worth emphasizing that although the tables in this appendix are based on general expert judgement, a regulatory body may need to adjust them in accordance with its organization, management and the regulatory approach adopted.

TABLE 13. QUADRANT COMPETENCE AREAS TYPICALLY REQUIRED FOR THE CORE REGULATORY FUNCTIONS

		Review and assessment	Authorization	Inspection	Enforcement	Development of regulations
1.	Competence related to the legal, regulatory and organizational basis					
1.1	Legal basis	-	X	X	X	X
1.2	Regulatory policies and approaches	X	X	X	X	X
1.3	Regulations and regulatory guides	X	X	X	X	X
1.4	Management system	X	X	X	X	X
2.	Technical disciplines competences					
2.1	Basic science and technology	X	-	X	-	X
2.2	Applied science and technology	X	-	X	-	X
2.3	Specialized science and technology	X	-	X	-	X
3.	Competences related to regulatory body's practices					
3.1	Review and assessment	X	X	-	-	-
3.2	Authorization	-	X	-	-	-
3.3	Inspection	-	-	X	-	-
3.4	Enforcement	-	-	X	X	-
3.5	Development of regulations and guides	-	-	-	-	X
4.	Personal and behavioural competences					
4.1	Analytical thinking and problem solving	X	X	X	X	X
4.2	Personal effectiveness and self - management	X	X	X	X	X
4.3	Communication	X	X	X	X	X
4.4	Team work	X	X	X	-	X
4.5	Managerial competences and leadership	-	X	X	-	X
4.6	Safety culture competence	X	X	X	X	X

TABLE 14. QUADRANT COMPETENCE AREAS TYPICALLY REQUIRED FOR SOME ADDITIONAL FUNCTIONS OF THE REGULATORY BODY

		Research and	Emergency Preparedness	International Cooperation	Public Communication
1.	Competence related to the legal, regulatory and organizational basis				
1.1	Legal basis	-	X	X	X
1.2	Regulatory policies and approaches	-	X	X	X
1.3	Regulations and regulatory guides	-	X	X	X
1.4	Management system	-	X	X	X
2.	Technical disciplines competences				
2.1	Basic science and technology	X	X	X	-
2.2	Applied science and technology	X	X	X	-
2.3	Specialized science and technology	X	-	-	-
3.	Competences related to regulatory body's practices				
3.1	Review and assessment	-	X	X	-
3.2	Authorization	-	X	X	-
3.3	Inspection	-	-	X	-
3.4	Enforcement	-	-	X	-
3.5	Development of regulations and guides	-	-	X	-
4.	Personal and behavioural competences				
4.1	Analytical thinking and problem solving	X	X	X	X
4.2	Personal effectiveness and self -management	X	X	X	X
4.3	Communication	-	X	X	X
4.4	Team work	X	X	X	X
4.5	Managerial competences and leadership	X	X	X	X
4.6	Safety culture competence	X	X	X	X

APPENDIX III QUESTIONNAIRE FOR DEVELOPING COMPETENCE PROFILES AND FOR REGULATORY BODIES

This appendix gives comprehensive examples of KSAs for each quadrant area, relevant to the core regulatory functions and responsibilities of the regulatory body (as presented in section 8.1.1 of this document). These KSAs are in line with the general examples provided in Ref. [8].

Additionally, Ref. [8] offers the following generic definition for the levels of competence in terms of basic, medium and high:

Basic: General competence in the area concerned.

Medium: A competence level sufficient in routine cases.

High: A competence level required for more complex or novel cases or at the strategic level within the regulatory body.

It is understood that each level of competence incorporates and builds on the elements of the previous level(s).

This appendix also provides more specific definitions of level of competence for each quadrant as examples. It is noted that both the definitions of KSAs, as well as the definitions of the levels of competence offered in this appendix are based on judgement. They are not intended to cover all circumstances and not to be considered prescriptive. It is recommended to review and adjust them to the particular needs of the organization undertaking the assessment.

III.1. QUADRANT 1: COMPETENCE RELATED TO THE LEGAL, REGULATORY AND ORGANIZATIONAL BASIS

III.1.1. Legal basis

This competence area is the knowledge of, and skills needed to comprehend and use, relevant documents that establish the legal framework for regulatory control of facilities and activities.

Typically, the regulatory body needs certain levels of knowledge of legislation and standards related to the regulated facilities and activities, including:

(a) Radiation safety and security;
(b) Environmental protection;
(c) Public health and safety;
(d) Labour health and safety;
(e) Transport, import and export of radioactive material;
(f) Criminal and civil law;
(g) Civil protection.

The regulatory body may also need knowledge in relevant international instruments and documentation such as:

(a) IAEA safety standards;
(b) Code of conduct on the safety and security of radioactive sources, and its supplementary Guidance on the import and export of radioactive sources;
(c) Joint convention on the safety of spent fuel management and on the safety of radioactive waste management;
(d) Convention on nuclear safety;
(e) Convention on early notification of a nuclear accident;
(f) Convention on assistance in the case of a nuclear or radiological emergency.

Basic: Basic understanding of relevant/applicable national legislation and international instruments.

Medium: Good understanding of relevant/applicable national legislation and international instruments and of their relationship with the regulatory duties and responsibilities of the organization.

High: Thorough understanding and ability to consider complex legal situations in the course of giving legal advice related to regulatory duties.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
1.1.1. Understanding of the legal system in the country and the hierarchy and interrelationship of legislation, standards and guidelines		
1.1.2. Understanding of relevant legislation and standards related to radiation safety		
1.1.3. Understanding of relevant legislation and standards, related to security of radiation sources		
1.1.4. Understanding of relevant legislation and standards, related to environmental protection and impact assessment		
1.1.5. Understanding of relevant legislation and standards, related to public health and safety		
1.1.6. Understanding of relevant legislation and standards, related to occupational health and safety		
1.1.7. Understanding of relevant legislation and standards, related to transport of radioactive material		
1.1.8. Understanding of relevant legislation and standards, related to import and export of radioactive material		
1.1.9. Understanding of relevant legislation and standards, related to criminal and civil law		
1.1.10. Understanding of relevant legislation and standards related to civil protection		
1.1.11. Understanding and use of other legal instruments such as interpretations offered by legal counsels and courts		
1.1.12. Understanding of relevant international instruments, conventions and guidance applicable to the regulatory body		
1.1.13. Understanding of relevant international, including IAEA, safety standards		
1.1.14. Understanding of the Code of conduct on the safety and security of radioactive sources, and its supplementary Guidance on the import and export of radioactive sources		
1.1.15. Understanding of the powers and authority of the regulatory body and its staff		
1.1.16. Ability to apply relevant legislation, standards and international instruments		
1.1.17. Ability to cooperate with national and international organizations, and other regulatory bodies		
1.1.18. Appreciation of the rights of all interested parties affected, directly or indirectly, under the provisions of the legal framework		

III.1.2. Regulatory policies and approaches

This competence area is the ability to understand and apply the regulatory policies and approaches in order to achieve the relevant regulatory objectives.

Basic: Basic understanding of the mandate, mission and objectives of the regulatory body; basic knowledge of policies, procedures and guidance; basic knowledge of the regulatory functions.

Medium: Good understanding and ability to relate policies, processes and procedures to regulatory functions. If a management system is in place, a full understanding of the system and its application to one's own work.

High: Thorough understanding of and ability to apply policies, processes and procedures to regulatory functions in complex situations and in providing direction on their application.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
1.2.1. Understanding of the mandate, mission and strategic long and short-term objectives of the regulatory body		
1.2.2. Understanding and demonstration of the values of the regulatory body and the principles of good regulation, e.g., independence, openness, effectiveness, efficiency, clarity, objectivity, stability, proportionality, accountability and consistency		
1.2.3. Understanding of the regulatory body governance		
1.2.4. Understanding of the policies and principles which form the basis for all regulatory processes, and ability in their application		
1.2.5. Understanding of regulatory body policies and principles as they apply to emergency preparedness and response		
1.2.6. Understanding of regulatory body policies and principles as they apply to research and development activities		
1.2.7. Understanding of regulatory body policies and principles as they apply to communication with interested parties, including the public		
1.2.8. Understanding of regulatory body policies and principles as they apply to international cooperation		
1.2.9. Understanding of regulatory body policies and principles as they apply to resource management and training activities		
1.2.10. Understanding of regulatory body policies and arrangements for operational experience feedback		
1.2.11. Understanding of the need and the means to involve interested parties in the performance of regulatory functions		
1.2.12. Appreciation of the mandate, mission, objectives and values of the regulatory body and how they affect the regulatory activities and decisions		
1.2.13. Appreciation of measures for implementing actions to achieve the short-term and long-term strategic objectives and goals of the regulatory body		

III.1.3. Regulations and guides

This competence area is the ability to understand and use the regulations and guides. Regulations and guides relevant to radiation facilities and activities typically cover issues such as
   (a) General:

      i.   Obligations, roles and responsibilities for radiation safety;
      ii.   Justification, optimisation and dose limitation;
      iii. Education and training;
      iv. Recognition of radiation protection experts (RPE) and other experts (e.g. RPE, radiation protection officers (RPO), exposure device operators, etc);

<ol type="i" start="5">
Calibration of instruments and dosimeters;
Requirements for design, construction, commissioning, operation; (including maintenance) and decommissioning of radiation facilities and activities;
Provisions and procedures for notification, authorisation, review and assessment, inspection and enforcement.

(b) Planned exposure situations:

<ol type="i">
Authorisation, notification, exemption and clearance;
Requirements for the authorisation of facilities and activities:

Organizational arrangements, including resources and competence;
Radiation protection programme within a facility;
Safety assessment and periodic review.

Control of the use of sources, including import, export and security aspects;
Transport of radiation sources and radioactive waste;
Waste management (storage, conditioning, disposal);
Control and justification of non-medical exposures;
Occupational exposure:

Requirements on employers with staff being occupationally exposed;
Dose registration, dose passports;
Medical requirements, health certificates;

Medical exposure:

Certification of staff (medical physicist, radiological medical practitioner, etc.);
Justification of medical exposures;
Establishment and use of diagnostic reference levels;
Specific requirements for procedures in nuclear medicine, therapy and imaging;
Exposure of carers and comforters, volunteers etc.

Public exposure:

Control of radioactive discharges;
Requirements on environmental monitoring programmes;
Control of direct exposures;
Non-medical exposures.

(c) Existing exposure situations:

<ol type="i">
Exposure to NORM (e.g., building material, drinking water);
Radon exposures;
Control of air crew exposure to cosmic radiation;
Control of exposures due to residual radioactivity (e.g., due to historical activities or accidents).

(d) Emergency exposure situations:

<ol type="i">
Hazard assessment, accident scenarios;
Development and exercising of emergency plans and procedures;
Notification and alerting;
Monitoring and dose assessment (including measurements and modelling);
Implementation of protective actions.

Basic: Basic understanding of the regulations and guides with the ability to correctly interpret, apply and revise existing documents within a specific area of expertise;

Medium: Good understanding of the regulations and guides with ability to draft new regulations and guides to satisfy regulatory requirements and guide regulatory decisions for current and emerging radiation exposure situations, keeping in mind the needs and rights of all interested parties. Knowledge of international standards and philosophy, in addition to the national requirements;

High: Thorough understanding of the regulations and guides with ability and practical experience to produce regulations and guides, to train others in their use and to monitor and guide their practical implementation, taking into account legal implications. Awareness and understanding of international standards and philosophy, in addition to the national requirements.

KSAs		Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
1.3.2	Understanding and ability to apply radiation protection regulations and guides		
1.3.3	Understanding and ability to apply the requirements for education and training of staff and experts dealing with radiation safety as appropriate to different sectors		
1.3.4	Understanding and ability to apply the requirements for calibration of instruments and dosimeters		
1.3.5	Understanding and ability to apply the requirements of authorisation, notification, exemption and clearance		
1.3.6	Appreciation and ability to apply the concept of a graded approach to regulation		
1.3.7	Understanding and ability to apply the safety requirements for radiation sources		
1.3.8	Understanding and ability to apply the security requirements for radiation sources		
1.3.9	Understanding and ability to apply the requirements related to radioactive waste management (storage, conditioning, disposal)		
1.3.10	Understanding and ability to apply the requirements related to the transport of radiation sources and radioactive waste		
1.3.11	Understanding and ability to apply the requirements related to occupational exposure		
1.3.12	Understanding and ability to apply the requirements related to medical exposure		
1.3.13	Understanding and ability to apply the requirements related to radon and NORM (Naturally Occurring Radioactive Material)		
1.3.14	Understanding and ability to apply the requirements related to control of air crew exposure to cosmic radiation		
1.3.15	Understanding and ability to apply the requirements related to radiation protection and the control of exposures due to residual radioactivity		
1.3.16	Understanding and ability to apply the requirements related to emergency preparedness and response		
1.3.17	Understanding of industry codes and standards such as ISO, IEC and others		
1.3.18	Appreciation of the requirements and implications of national and international radiation safety standards		

III.1.4. Management system

This competence area is the knowledge of, and skills needed to understand and apply the regulatory body's management system.

Basic: Basic understanding of the management system and the processes which apply to an individual's function;

Medium: Good understanding of the management system's processes and principles and ability to implement them in one's own work and those of one's team or work area;

High: Thorough understanding of the management system for the entire organization, the interaction between different processes and the ability to develop and revise the system as required.

	KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
1.4.1	Understanding of the overall structure of the regulatory body's management system		
1.4.2	Understanding of the regulatory body's goal, strategies and objectives		
1.4.3	Understanding of the allocation of responsibilities and accountabilities within the regulatory body		
1.4.4	Ability to apply and implement processes related to the regulatory body's management system in a timely manner		
1.4.5	Understanding of the regulatory body's system for the control of information, documentation and records		
1.4.6	Understanding of the regulatory body's approaches to measuring, assessing and improving the effectiveness of the management systems		
1.4.7	Understanding of the graded approach to the implementation of the management system		
1.4.8	Understanding of regulatory body's processes and the interfaces between them		
1.4.9	Ability to develop processes that will become part of the management system		
1.4.10	Ability to develop an integrated management system		
1.4.11	Appreciation of the added value of the management system for rigorous and timely delivery of regulatory functions		

III.2. QUADRANT 2: TECHNICAL DISCIPLINES COMPETENCES

Note that the need for a specific subject matter on this list related to the technical competences in Quadrant 2 will depend on the radiation facilities and activities in the country and the specific responsibilities of the regulatory body. A particular regulatory body may require competences in some or all of the technical disciplines listed below or even in other areas of science and engineering.

III.2.1. Basic science and technology

This competence area is the knowledge of, and skills needed to understand and apply science fundamentals in a particular field.
Some typical science and technology fields that are common to many regulatory bodies include:

  (a) Physics;
  (b) Chemistry;
  (c) Earth and Environmental sciences;
  (d) Health sciences;
  (e) Communication and Social sciences.

Basic: Basic knowledge of a field of science such as would be typical of a university graduate with a major in the field, but with no/limited experience.

Medium: Good knowledge of a field of science such as would be typical of a holder of an advanced/specialised degree in the field with limited experience.

High: Thorough knowledge of a field of science such as would be typical of a holder of an advanced/specialised degree in the field with extensive experience.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
2.1.1 Understanding of science fundamentals in the field of physics		
2.1.2 Understanding of science fundamentals in the field of chemistry		
2.1.3 Understanding of science fundamentals in the field of engineering		
2.1.4 Understanding of science fundamentals in the field of environmental science		
2.1.5 Understanding of science fundamentals in the field of earth science		
2.1.6 Understanding of science fundamentals in the field of health science		
2.1.7 Understanding of science fundamentals in the field of communication science		
2.1.8 Understanding of science fundamentals in the field of social science		

III.2.2. Applied and specialised science and technology:

This competence area is the knowledge of, and skills needed to understand and apply science concepts or specialized technology in specific areas, in addition to the KSAs in basic science and technology as described above.

These areas may include:

(a) Medical physics;
(b) Radiation or Health physics;
(c) Radiation dosimetry;
(d) Radiochemistry;
(e) Radioecology;
(f) Technologies regarding the application of radiation in medicine, industry, research and agriculture;
(g) Radiology, Radiotherapy, Nuclear medicine;
(h) Mechanical engineering, Civil engineering, Physics engineering;
(i) Safety assessment methodology;
(j) Hazard assessment;
(k) Calibration and Radiation measurement;
(l) Radiation source security;
(m) Safety in transportation of radioactive material;
(n) Management of radioactive waste (e.g. hydrology, geochemistry, geology);
(o) Decommissioning of facilities;
(p) Emergency management;
(q) Human, social and organizational factors, including safety culture.

Basic: Basic knowledge of a relevant specialised science discipline such as would be typical of a recent university graduate with a major in the field with no experience.

Medium: Good knowledge of a relevant specialised science discipline such as would be typical of a holder of an advanced/specialised degree with limited experience.

High: Thorough knowledge of a relevant specialised science discipline such as would be typical of a holder of an advanced/specialised degree with extensive experience.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
2.2.1 Understanding of technologies regarding the application of radiation in medicine, industry, research and agriculture		
2.2.2 Understanding of medical physics		
2.2.3 Understanding of radiation or health physics		
2.2.4 Understanding of radiation dosimetry		
2.2.5 Understanding of radiochemistry		
2.2.6 Understanding of radioecology		
2.2.7 Understanding of radiology, radiotherapy, nuclear medicine		
2.2.8 Understanding of mechanical engineering, civil engineering, physics engineering		
2.2.9 Understanding of safety assessment methodology		
2.2.10 Understanding of hazard assessment		
2.2.11 Understanding of calibration and radiation measurement		
2.2.12 Understanding of radiation source security		
2.2.13 Understanding of safety in transportation of radioactive material		
2.2.14 Understanding of management of radioactive waste		
2.2.15 Understanding of decommissioning of facilities		
2.2.16 Understanding of emergency management		
2.2.17 Understanding of human, social and organizational factors, including safety culture		
2.2.18 Ability to apply science concepts in the relevant specific areas above		

III.3. QUADRANT 3: COMPETENCES RELATED TO THE MAIN FUNCTIONS OF THE REGULATORY BODY

This section refers to the competences related to the main regulatory body functions, such as review and assessment, authorisation, inspection, enforcement and development of regulations and guides.

III.3.1. Review and assessment:

This competence area is the ability to examine and determine whether the safety assessments and related documentation submitted by an applicant demonstrate that facilities or activities will comply with the relevant safety requirements.

Basic: Basic understanding of regulatory requirements, processes and procedures for review and assessment.

Medium: Good understanding and experience of regulatory requirements, processes and procedures for review and assessment and ability to prepare evidence-based regulatory recommendations.

High: Good understanding of overall regulatory processes coupled with thorough understanding and extensive experience of regulatory review and assessment. Ability to manage new or complex situations in order to reach regulatory decisions.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
3.1.1 Understanding of the regulatory requirements and of the processes and procedures for review and assessment		
3.1.2 Understanding of the overall regulatory system and processes and how review and assessment fits into these		
3.1.3 Understanding of the technical aspects of the subject matter of the safety assessment under review		
3.1.4 Understanding of the applicant's processes and assumptions used in carrying out safety assessments		
3.1.5 Ability to make judgement on whether submitted documents conform to regulatory requirements and other standards, and are complete and accurate		
3.1.6 Ability to examine documentation, recognize issues related to safety and synthesize information in order to make judgement regarding the overall safety and compliance with regulatory requirements, taking into account past performance, and enforcement and inspection history		
3.1.7 Ability to produce assessment reports, emphasizing the findings relevant to safety of a facility or activity		
3.1.8 Ability to initiate other regulatory processes when needed (such as inspection)		
3.1.9 Ability to take the outcomes of other regulatory processes into consideration in the review and assessment process		
3.1.10 Appreciation of the adequacy of the regulatory review and assessment process and the ability to identify and implement necessary improvements		

III.3.2. Authorization

This competence area is the ability to ensure that the authorisation application and associated documents comply with the regulatory requirements. It also includes the ability to ensure that the licence or other authorisation documents align with the regulatory policies and processes.

Basic: Basic understanding of regulatory requirements, processes and procedures for authorisation, including the format and content of a licence (and associated licence conditions) or other form of authorisation related to a radiation facility or activity.

Medium: Good understanding and experience of regulatory requirements, processes and procedures of authorisation. Ability to synthesize various licence conditions and to prepare evidence-based recommendations for authorisation decisions.

High: Good understanding of overall regulatory processes coupled with thorough understanding and extensive experience of regulatory authorisation. Ability to manage new or complex situations in order to reach authorisation decisions.

KSAs		Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
3.2.1	Understanding of the regulatory requirements, and of the processes and procedures for authorization		
3.2.2	Understanding of the overall regulatory system and processes and how authorisation fits into these		
3.2.3	Understanding of the full range of restrictions or conditions that may be attached to an authorization		
3.2.4	Ability to review the applicant's submission to verify that it includes the correct content for an authorisation application		
3.2.5	Ability to examine and assess authorisation documentation and relevant information (such as applicant's submission; past performance, enforcement and inspection history)		
3.2.6	Ability to identify the need for further information from the applicant when needed		
3.2.7	Ability to make judgement regarding the impact of an authorisation application on radiation safety and security of facilities and activities, and the compliance with regulatory requirements		
3.2.8	Ability to initiate other regulatory processes when needed (such as inspection or review and assessment)		
3.2.9	Ability to take the outcomes of other regulatory processes into consideration in the authorisation process		
3.2.10	Ability to make decisions on granting, modifying, suspending or withdrawing authorizations		
3.2.11	Appreciation of the adequacy of the authorization process and the ability to identify and implement necessary improvements.		

III.3.3. Inspection

This competence area is the independent gathering of information by review and direct observation of a facility or activity to verify accuracy of applicant information and compliance with regulatory requirements.

Basic: Basic understanding of regulatory requirements, processes and procedures relating to inspections. Ability to gather information, ensure its accuracy and to assist experienced inspectors.

Medium: Good understanding and experience of regulatory requirements, processes and procedures for inspection. Ability to conduct inspections independently.

High: Good understanding of overall regulatory processes coupled with thorough understanding and extensive experience of regulatory inspections. Ability to lead team inspections. Ability to manage complex situations related to inspections in order to make regulatory decisions.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
3.3.1 Understanding of the regulatory requirements, and the processes and procedures for inspection		
3.3.2 Understanding of the overall regulatory system and processes and how inspection fits into these		
3.3.3 Understanding of licensee operational, surveillance and maintenance programmes		
3.3.4 Understanding of facility or activity specific technical information related to radiation safety and security		
3.3.5 Understanding of emergency preparedness and response arrangements		
3.3.6 Understanding of operational experience and of methods for analysing incidents/accidents		
3.3.7 Ability to produce and implement an inspection plan for a specific facility or activity		
3.3.8 Ability to develop an inspection programme and to choose appropriate inspection types		
3.3.9 Ability to examine and synthesize inspection information (such as past performance, enforcement and inspection history, work schedule of a facility or activity)		
3.3.10 Ability to take the outcomes of other regulatory processes into consideration in the inspection process		
3.3.11 Ability to initiate other regulatory processes when needed (such as review and assessment, authorisation or enforcement)		
3.3.12 Ability to evaluate information and to recognize safety significant issues and possible non-compliances by direct observation, interviews or examination of documents		
3.3.13 Ability to make judgement regarding the radiation safety of a facility or activity and to assess the significance of inspection findings		
3.3.14 Ability to present the inspection findings to the authorized parties and discuss any corrective actions to be taken		
3.3.15 Ability to recognize when immediate actions are required to stop activities that constitute an immediate danger		
3.3.16 Ability to prepare official inspection reports on the inspection findings, required corrective actions, and audits conducted in facilities or in respect of activities		
3.3.17 Ability to follow up on findings and corrective actions from previous inspections		
3.3.18 Appreciation of the adequacy of the authorisation process and the ability to identify and implement necessary improvements.		

III.3.4. Enforcement

This competence area is the selection of suitable and graded enforcement actions in accordance with the legal framework and regulatory body policy in response to non-compliances with regulatory requirements.

Basic: Basic understanding of the legal framework and the regulatory body's enforcement policy and processes; the legal authority of an inspector; ability to identify non-compliant situations; understanding the gravity of an event or issue; ability to assist experienced inspectors in taking enforcement actions.

Medium: Good understanding of the enforcement processes and application of the regulatory body's enforcement policy with the ability to identify non-compliant situations during an inspection, to differentiate between minor and major violations and ability to undertake graded enforcement actions.

High: Good understanding of overall regulatory processes coupled with thorough understanding and extensive experience of enforcement policy and actions. Ability to address unusual or complex situations, evaluate corrective actions and deal with non-compliances in order to make regulatory decisions.

	KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
3.4.1	Understanding of the legal framework and the regulatory body's enforcement policy and processes		
3.4.2	Understanding of the regulatory framework and processes and how enforcement fits into these		
3.4.3	Ability to decide upon and initiate enforcement actions in response to non-compliances		
3.4.4	Ability to determine whether other regulatory processes (such as inspection or authorisation) are needed in order to support an enforcement action		
3.4.5	Ability to determine where liaison with other agencies is needed in order to support an enforcement action (such as evidence gathering by law enforcement agencies, legal advice or actions by other regulators)		
3.4.6	Ability to judge the radiation safety or security significance of non-compliances and to identify commensurate enforcement actions		
3.4.7	Ability to evaluate and confirm the effective implementation of appropriate corrective actions		
3.4.8	Appreciation of the adequacy of the enforcement policy and processes and the ability to identify and implement necessary improvements.		

III.3.5. Development of regulations and guides

This competence area is the capacity to produce regulations, guides and other supporting documents, as a means for the regulatory body to ensure that regulatory control is stable, unambiguous and applied consistently.

Basic: Basic understanding of the regulations, guides and other supporting documents with the ability to interpret, review and revise existing documents within a specific area of expertise.

Medium: Good understanding of the subject matter and ability to draft new regulations, guides and other supporting documents. Ability to seek and make appropriate use of the input of interested parties.

High: Good understanding of overall regulatory processes, with thorough understanding ability and extensive experience in developing regulations and guides. Ability to train others in their development, and to monitor and guide their use taking into account legal implications.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
3.5.1 Understanding of the regulatory body's requirements, processes and procedures for developing regulations and guides		
3.5.2 Understanding of the regulatory framework for radiation safety and security		
3.5.3 Ability to identify information to be considered in drafting or amending the regulations/guides, such as technical information, national and international standards and other countries' regulatory framework		
3.5.4 Ability to examine and identify the need for new regulations/guides or the amendment of existing regulations/guides		
3.5.5 Ability to identify and appropriately address interfaces with other legislation, regulations and guides		
3.5.6 Ability to draft regulations and guides so that they meet their objectives and are thorough, consistent, understandable and practical		
3.5.7 Ability to adequately assess and incorporate in drafting, as applicable, comments received from interested parties		
3.5.8 Appreciation of the adequacy of the regulations and guides, and ability to identify and implement necessary improvements.		

III.4. QUADRANT 4: PERSONAL AND BEHAVIOURAL COMPETENCES

III.4.1. Analytical thinking and problem-solving

This competence area is the ability to deal with problems/issues objectively, gather and integrate information and develop a comprehensive understanding to aid effective decision-making.

Basic: Ability to solve simple problems/issues in a particular area of expertise, and to make decisions using guidance and criteria appropriate to this field of expertise.

Medium: Ability to analyse and solve complex problems/issues in a particular area of expertise or problems/issues involving multiple fields of expertise, and to select appropriate guidance and criteria and make decisions based on these criteria.

High: Ability to analyse and solve complex or novel problems/issues involving multiple fields of expertise, to integrate inputs from various sources, to select or develop appropriate guidance and criteria and to make complex and difficult decisions.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.1.1 Ability to assimilate, analyse and synthesize information gathered from various sources, such as interviewing, observation, and examining documentation		
4.1.2 Ability to identify key issues related to radiation facilities or activities		
4.1.3 Ability to distinguish between essential and non-essential details		
4.1.4 Ability to follow a systematic approach to problem solving including defining and specifying the nature and extent of the problem or issue, identifying underlying factors and causes and proposing solutions		
4.1.5 Ability to recommend appropriate actions and strategies to the regulatory body management		
4.1.6 Ability to come to sound conclusions, exercise sound judgement and make appropriate decisions		
4.1.7 Ability to deliver quality work that is timely, complete and accurate		

III.4.2. Personal effectiveness and self-management:

Planning and organization of work: This competence is about effective and efficient co-ordination of tasks to achieve a desired objective and meet the regulatory body's performance standards.

Basic: Ability to plan a number of tasks in accordance with established priorities, to meet objectives and schedules, and to produce expected results.

Medium: Ability to organize a workload consisting of multiple tasks, to set priorities and schedules based on instructions, to co-ordinate inputs from others, and to produce quality results.

High: Ability to organize a complex workload, to delegate responsibilities and tasks, to co-ordinate multiple contributions from others, to set priorities and schedules, and to produce integrated results.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.2.1 Ability to set priorities, organize work and meet scheduled objectives		
4.2.2 Ability to find simpler, faster and more effective ways of achieving objectives		

Self-management: This competence is about working independently, exercising judgement and demonstrating flexibility in the completion of activities, especially in complex or challenging situations.

Basic: Ability to perform assigned tasks independently, with flexibility in response to established priorities, to exercise good judgement, and to produce expected results.

Medium: Ability to handle a workload of multiple tasks with flexibility in setting priorities and schedules, to obtain assistance as needed and, even in times of stress, to exercise good judgement and produce quality results.

High: Ability to organize a complex workload, to set priorities and schedules, delegate appropriately and, even in times of stress, to exercise sound judgement and make appropriate decisions.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.2.3 Ability to work independently with minimal supervision		
4.2.4 Ability to adapt behaviour to accommodate the sensitivities of others		
4.2.5 Ability to cope with stressful situations and to sustain mental effort to achieve objectives		
4.2.6 Ability to act professionally and convincingly in front of interested parties when recommending actions with safety implications		
4.2.7 Ability to recognize one's own strengths and weaknesses and to plan accordingly for personal and professional development and training		
4.2.8 Ability to periodically assess one's own performance at appropriate intervals against current and anticipated work requirements and to identify means for improvement		
4.2.9 Ability to recognise and respect responsibilities and accountability for delivering results		
4.2.10 Ability to make realistic commitments based on workload and capabilities		
4.2.11 Ability to make use of time management techniques		
4.2.12 Ability to keep a positive attitude in difficult situations		
4.2.13 Ability to show flexibility and make adjustments in response to feedback and constructive criticism		

III.4.3. Communication

This competence area is about engaging in effective dialogue, self-representation and interaction with others (e.g. interested parties and colleagues) through effective listening, speaking, writing and delivery of presentations, understanding people's view points and delivering meaningful messages.

Basic: Ability to communicate effectively orally and in writing, primarily with colleagues and supervisors within the organization, with limited interactions outside the organization.

Medium: Ability to communicate effectively orally and in writing, both within and outside the organization, including interactions with colleagues, authorised parties and the public.

High: Ability to communicate effectively orally and in writing, both within and outside the organization at a high level, including interactions with colleagues, authorised parties, the public, media, government and international counterparts. Ability to coach others in effective communication skills.

KSAs		Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.3.1	Ability to communicate effectively in small groups/meetings		
4.3.2	Ability to effectively communicate regulatory requirements, inspection findings, expectations, corrective actions and enforcement measures		
4.3.3	Ability to communicate effectively in front of large audiences		
4.3.4	Ability to communicate effectively in crisis situations		
4.3.5	Ability to communicate complex issues and decisions in a manner that encourages clear understanding by all		
4.3.6	Ability to produce clear, concise, informed written reports which are appropriate to the needs of the reader		
4.3.7	Ability to use effective interview techniques to gather important information and to identify safety significant issues		
4.3.8	Ability to respond appropriately to on-the-spot questions, using one's own knowledge when prepared answers are not available		
4.3.9	Ability to provide factual answers to questions consistent with the regulatory body's policies and official positions on such issues		
4.3.10	Ability to communicate in a clear and respectful manner in order to build and maintain trust		
4.3.11	Ability to effectively interact with difficult people		
4.3.12	Ability to effectively use and maintain formal and informal networks to share information, gather knowledge and find better solutions to problems or issues		
4.3.13	Ability to communicate effectively in other languages, in particular English		
4.3.14	Appreciation of the particular rights, needs and expectations of different interested parties		

III.4.4. Teamwork

This competence area is about working collaboratively with others to achieve common objectives.

Basic: Ability to work collaboratively in a team.

Medium: Ability to work collaboratively and lead a small team.

High: Ability to lead multiple teams or large teams, to work collaboratively with others on more complex issues.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.4.1 Ability to cooperate well with other team members at all levels, to follow established processes for teamwork, to maintain a positive and productive atmosphere, and to respect diversity		
4.4.2 Ability to share individual expertise and experience with others to achieve common objectives, and to give timely and constructive feedback to other team members		
4.4.3 Ability to show flexibility in response to change, and to maintain commitment to team objectives even when one's own ideas are not supported		
4.4.4 Ability to understand the interests, motivations and needs of others from their perspective		
4.4.5 Ability to integrate and use feedback, progress reports and lessons learned to ensure commitments are met		
4.4.6 Ability to establish and communicate the objectives, expectations and responsibilities for the team		
4.4.7 Ability to motivate others and bring team members together to achieve collaborative results		
4.4.8 Openness to receive help from team members and to offer assistance to them		

III.4.5. Managerial and leadership competences

Strategic management: This competence area is about having a deep understanding of an organization, its strategies and high-level goals, planning, work organization, follow-up activities and decision making, and setting the long-term vision.

Basic: Ability to set short-term goals and monitor progress.

Medium: Ability to communicate strategy; to develop objectives from goals; to organize work effectively; and to monitor and improve processes.

High: Ability to establish short- and long-term goals for the entire organization, and to develop a vision and related strategies aligned with the regulatory body's mission, taking into account the needs of society and possible future changes in the regulatory environment.

KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.5.1 Ability to plan on a long-term horizon and to develop a viable strategic plan		
4.5.2 Ability to establish goals and targets, and to allocate resources appropriately		
4.5.3 Ability to develop sound policies		
4.5.4 Ability to recognize the need to change the policies and strategies		
4.5.5 Appreciation of the need to develop consistent strategies, goals and policies		
4.5.6 Appreciation of external factors, including political, technological, environmental, legal and societal issues		

Leadership: This competence area is about the ability to inspire and motivate others, demonstrate the values of the organization, and demonstrate tolerance, objectivity, openness and fairness.

Basic: Ability to demonstrate tolerance, objectivity, openness and fairness in dealing with others; ability to demonstrate the organization values.

Medium: Ability to demonstrate tolerance, objectivity, openness and fairness in dealing with others, including colleagues, subordinates and managers, and to lead small groups; ability to demonstrate the organization values.

High: Ability to demonstrate tolerance, objectivity, openness and fairness in dealing with others, including colleagues, subordinates and senior managers and to lead large or multiple work groups; ability to demonstrate and promote the organization values.

	KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.5.7	Ability to communicate an inspiring and compelling vision that motivates others to deliver high performance		
4.5.8	Ability to promote the values of the organization and be a role model for others		
4.5.9	Ability to lead a team with objectivity, openness and fairness		
4.5.10	Ability to adjust the level of authority and support to suit individual circumstances		
4.5.11	Ability to instil trust in others' abilities, to give constructive feedback, and to coach others		
4.5.12	Ability to motivate and to promote and maintain a sense of ownership in others by keeping them informed of any developments in the activities related to their duties		
4.5.13	Ability to resolve interpersonal conflict and ensure mutually beneficial solutions		
4.5.14	Recognition of the need to take prompt and effective action to deal with unprofessional or unethical behaviour		

Negotiation: This competence area is about reconciling different views and persuading others to seek and accept a resolution.

Basic: Ability to participate effectively in two-party negotiations.

Medium: Ability to participate effectively in multi-party negotiations.

High: Ability to participate and/or lead highly complex negotiations, including those on policy matters.

	KSAs	Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.5.15	Ability to resolve differences by encouraging alternative proposals, taking into account the positions of all interested parties and facilitating open discussion		
4.5.16	Ability to analyse external factors affecting the negotiations		
4.5.17	Ability to conduct effective negotiation keeping in mind organizational priorities		
4.5.18	Ability to build consensus amongst all parties		

Project management**:** This competence area is about completing a set of complex tasks in a coordinated manner in accordance with defined objective, schedule, scope, resources and budget.

Basic: Ability to co-ordinate and complete tasks of limited complexity within agreed schedule, scope, and resources.

Medium: Ability to define, organize, co-ordinate and complete complex tasks within

agreed schedule, scope and resources.

High: Ability to define, organize, co-ordinate and complete multiple complex tasks, and to determine the necessary schedule, scope and resources.

KSAs		Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.5.19	Ability to develop project plans, establish deliverables and performance criteria, and to schedule activities		
4.5.20	Ability to identify potential problems/issues, to identify and allocate resources and to define alternate strategies for their resolution		
4.5.21	Ability to provide accurate, complete and timely project status reports		
4.5.22	Ability to establish a strategy appropriate to changing circumstances and to develop contingency plans		
4.5.23	Ability to review and evaluate results achieved against those planned		
4.5.24	Ability to select and use appropriate project management tools		

III.4.6. Safety culture

Safety culture is the assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receive the attention warranted by their significance. This competence area is about understanding, supporting and promoting a strong safety culture.

Basic: Understanding of the attributes and characteristics of safety culture.

Medium: Good understanding of methods and tools available for the assessment of safety culture; ability to support and promote a strong safety culture.

High: Thorough understanding of methods and tools for assessment of safety culture; ability to support and promote a strong safety culture; ability to identify measures for improving safety culture within the regulatory body or authorised parties.

KSAs		Required Level (B, M, H, NA)	Existing Level (B, M, H, None)
4.6.1	Understanding of the attributes and characteristics of safety culture		
4.6.2	Understanding of the interaction between individuals, technology and the organization with respect to safety culture		
4.6.3	Understanding of the importance of periodic self-assessment by which the organization continually seeks to develop and improve its safety culture		
4.6.4	Ability to assess the prevailing safety culture in an organization (e.g. regulatory body, authorised party)		
4.6.5	Appreciation of the importance of a strong safety culture (learning and questioning attitude)		

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GLOSSARY

attitude. Attitude is the feelings, opinions, ways of thinking, perceptions, values, behaviour, and interests of an individual which allow a job or task to be undertaken to the best ability of that individual. Attitudes cannot wholly be taught directly and are partly a consequence of organizational culture.

competences. Competences are groups of related knowledge, skills and attitudes (KSAs) required to perform particular tasks of the functions of regulatory bodies. Competences are the mental, physical and behavioural tools required for an activity or a task.

knowledge. Knowledge is familiarity with something that can include facts, descriptions and information acquired through experience or education. It can refer to both the theoretical or practical understanding of a subject.

qualification. An official record of achievement awarded on the successful completion of a course of training or passing of an exam.

skill. A Skill is the learned capacity to perform a task to a specified standard.

task. A task is a measurable, assigned piece of work often to be finished within a certain time frame. It can be split into sub-tasks.

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