UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

# NQC UAE NATIONAL QUALIFICATION/AWARD

**For use by developers of UAE national qualifications based on national occupational standards (Q+NOS)**

| 1. General Profile of Qualification | | | | | | |
|---|---|---|---|---|---|---|
| 1.1 | Title | Level 4 Award for Radiation Emergency Workers - Tier 2 | | | | |
| 1.2 | Code | HLT04003NQ23 | | | | |
| 1.3 | Type | ☐ Principal Qualification | | ☑ Award | | |
| 1.4 | Credit and duration | Credit value | 4 credits | Duration | 60 hours | |
| 1.5 | QF*Emirates* Level | Level 4 | | | | |
| 1.6 | Aim | This award aims to provide learners with intermediate knowledge, skills and competencies to respond during subsequent phases of a nuclear or radiological emergency in a quick, safe and responsible manner, in accordance to agreed plans and in line with Emergency Response established policies, standards and procedures, to ensure that radiation measurements and decontamination are performed as planned, and that best Radiation Protection practices are maintained. | | | | |
| 1.7 | Qualification outcomes | Upon successful completion of this award, learners will be able to: | | | | |
| | | QO01 | Demonstrate intermediate knowledge in providing appropriate response actions as a member of a radiation emergency response team, during subsequent phases of a nuclear or radiological emergency | | | |
| | | QO02 | Demonstrate intermediate knowledge of radiation hazard identification and control, including ability to perform radiation dose rate and contamination measurements | | | |
| | | QO03 | Demonstrate intermediate knowledge in mitigation of potential damage to the environment from radiation sources | | | |
| | | QO04 | Demonstrate ability to use personal protective equipment, including respiratory protective equipment, during subsequent phases of a nuclear or radiological emergency | | | |
| | | QO05 | Describe the fundamentals of radioactive decontamination | | | |
| | | QO06 | Demonstrate ability to decontaminate areas and people, and safely manage corresponding radioactive waste | | | |
| | | QO07 | Demonstrate ability to select appropriate radiation detection instruments and to perform dose rate and contamination radiation measurements during subsequent phases of a nuclear or radiological emergency | | | |
| | | QO08 | Demonstrate ability to use and manage personal dosimeters | | | |
| 1.8 | Functions | ☐ Policy and strategy | QF 9-10 | ☐ Controlling | QF 6 | |
| | | ☐ Managing | QF 7-8 | ☑ Maintaining capability | QF 4-6 | |
| | | ☐ Specifying | QF 6-7 | ☐ Performing/carry out | QF 1-4 | |

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| 1.9 | Pathways/progression into other qualifications (if any) | Successful Candidates may progress to the Level 5 Award for Radiation Protection Officers - Tier 1 | |
| 1.10 | Licensing/regulatory requirements (if any) | Not applicable | |
| **2. Occupation and industry sector** | | | |
| 2.1 | ISCO title and code | Occupation title | Protective services workers not elsewhere classified |
| | | 4-digit ISCO code | 5419 |
| 2.2 | Industry sector | Sector | Community, health and social services |
| | | Sub-sector | Health Services |
| **3. Entry requirements for this qualification** | | | |
| 3.1 | Minimum requirements (if any) | Qualification(s) required for entry | Level 4 Award for Radiation Emergency Workers - Tier 1 |
| | | Other minimum requirements e.g. competence, experience | Candidates should already be employed in a sector in which work activity in the course of radiation emergencies is likely, or be students or trainees in nuclear or radiological sciences.<br>English language literacy.<br>Computational abilities. |
| 3.2 | Advisory requirements (if any) | Recommended requirements | It is recommended that medical fitness to work in a radiation emergency environment be obtained prior to work assignment.<br><br>Grade 12 education. |
| **4. Rules of combination** | | | |
| 4.1 | The learner must successfully complete the following minimum number of credits | | |

| Unit type | Min. Credits | Guidance on the rules of combination (if any) |
|---|---|---|
| Core | 4 | The learner must successfully complete 4 credits |

| 4.2 | Core unit standards | | | |
|---|---|---|---|---|
| Title | | Code (NQC to enter) | QF level | Credit value |
| Gain Knowledge on how to deal with radiation emergency situations – Nuclear and Radiation Emergency Worker Tier 2 | | HLT04098NU23 | Level 4 | 1 |
| Instigate protective measures to safeguard life – Nuclear and Radiation Emergency Worker Tier 2 | | HLT04099NU23 | Level 4 | 1 |
| Conduct radiation measurements during emergency situations - Nuclear and Radiation Emergency Worker Tier 2 | | HLT04101NU23 | Level 4 | 1 |
| Perform decontamination on people and facilities – Nuclear and Radiation Emergency Worker Tier 2 | | HLT04100NU23 | Level 4 | 1 |
| Total number of credits from core unit standards to be completed | | | | 4 |
| 4.3 | Stream unit standards | | | |
| Title | | Code (NQC to enter) | QF level | Credit value |
| | | | | |
| 4.4 | Optional unit standards | | | |
| Title | | Code (NQC to enter) | QF level | Credit value |
| | | | | |

## 5. Assessment advice

The assessment advice for the qualification to guide learners, assessors and verifiers must consider evidence requirements in NOS unit standards and summarise the main assessment approach and methods for the qualification that will ensure learners meet the qualification learning outcomes. (Note: Trainers, assessors, internal verifiers and external verifiers for this qualification must be occupationally competent in the occupational field of the qualification).

Assessment must be conducted in an environment where evidence gathered demonstrates consistent performance.
Learners must demonstrate consistent performance in conditions that are safe and replicate a potential accident workplace.

Assessment methods can include:
• Scenario setting
• Presentations
• Virtual simulations (or role plays) and modelling
• Written material and reports, including authenticated evidence from workplace and/or training courses
• Checklists and comparative charts
• Statements
• Evidence of written reports summarising results of candidate skills assessment
• Oral or written questioning

Evidence:
• Verbal or written questioning to assess candidate's knowledge
• Summative assessment to ensure consistency of performance in a range of contexts
• Formative evidence for this unit can be written, oral or diagrammatic
• Formative evidence ought to assist learners to learn and increase performance
• Summative assessment is based on real live work situations or simulated situations

Assessors and verifiers must satisfy NQC/VETAC requirements with subject matter expert related to radiation emergency assessments.

All evidence submitted by the learner must be verified and documented by the assessor for future evaluation purpose.
Summative assessment is based on real live work situations or simulated situations.

Assessment judgements are based on evidence that is documented valid, authentic, current, and sufficient, and are consistent with previous judgements made on similar evidence.

Re-submissions are permissible.

## 6. Glossary

| Term | Definition |
|---|---|
| Radiation Emergency Worker - Tier 1 | First responders directly involved in the initial activities on site, during the radiation accident, across all sectors (industrial, nuclear, research, medical, etc.).<br>They should be trained in general radiation protection and have a basic, broad understanding of radiological risks, and in detection of radiation. |

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| Radiation Emergency Worker - Tier 2 | Radiation Emergency Workers involved in subsequent accidental situation phases, and who would potentially be involved in activities of radiation levels' assessment and of decontamination. They should be able to measure radiation and to take appropriate actions in case decontamination is required. Additionally, the training should include more complex elements of radiation detection and measurement. |
| FANR Safety, Security, and Safeguards Glossary | FANR Safety, Security, and Safeguards Glossary aims to provide with a comprehensive compilation of all the terms included in the Federal Law by Decree No.6 of 2009 Concerning the Peaceful Uses of Nuclear Energy (the Nuclear Law) , the Federal Law by Decree No.4 of 2012 Concerning Civil Liability for Nuclear Damage, FANR regulations and FANR regulatory guides and their respective definitions.<br>The 2021 Edition of the FANR Glossary is an updated version of the initial Glossary issued in 2011 and reflects the updates in the legislative and regulatory framework of FANR. This document is developed for information purposes only, the official and authentic definitions being the ones contained in the laws, FANR regulations and regulatory guides as available on the FANR website.<br>https://www.fanr.gov.ae/en/open-data/fnar-glossary (in English)<br>https://www.fanr.gov.ae/ar/open-data/fnar-glossary (in Arabic) |

## 7. Developer details

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|---|---|---|
| 7.1 | Organisation(s) | Radiation Protection RNDC |

## 8. Key dates

| | | |
|---|---|---|
| 8.1 | Endorsement date | 01/06/2023 |
| 8.2 | Review date | 31/05/2028 |



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UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

# NQC UAE-NOS TEMPLATE

**For use by developers of UAE national occupational standards (UAE-NOS) packaged as unit standards**

| | | | | | |
|---|---|---|---|---|---|
| 1. | Title | Gain Knowledge on how to deal with radiation emergency situations – Nuclear and Radiation Emergency Worker Tier 2 | | | |
| 2. | Code | HLT04098NU23 | | | |
| 3. | Credit and duration | 3a) Credit value | 1 | 3b) Duration | 15 |
| 4. | Aim | This unit aims to provide Radiation Emergency Workers with the intermediate knowledge of radiation physics and radiation protection, and the intermediate skills to respond effectively, as Member of an Emergency Team, during subsequent phases of a nuclear or a radiological emergency situations, namely by performing radiation measurements and decontamination. | | | |
| 5. | Learning outcomes | At the end of this unit, learners will be able to: | | | |
| | | LO01 | Demonstrate intermediate knowledge in the organization and work of a radiation emergency response team in the UAE | | |
| | | LO02 | Demonstrate intermediate knowledge of radiation hazard identification and control, including decontamination and waste management activities | | |
| | | LO03 | Demonstrate understanding of the potential damage from radiation after a radiation emergency | | |
| 6. | QF*Emirates* Level | Level 4 | | | |
| 7. | Outcomes, performance criteria, and evidence requirements | | | | |

| Outcome 1 | LO01 |
|---|---|
| **Performance criteria** | |
| PC01 | Explain why all persons associated with performing functions in an emergency situation have to be suitably trained and qualified |
| PC02 | State the practical goal of emergency preparedness |
| PC03 | Describe the Incident Command System (ICS) structure that allows for a cooperative response by multiple agencies in the UAE |
| PC04 | List and describe the three major incident priorities that the Incident Commander will base a decision to expand (or contract) the ICS Organization |
| **Specific evidence requirements** | |
| Candidate must demonstrate knowledge of the Incident Command System in the UAE.<br><br>The following information is provided to aid the training provider in developing the course work:<br>PC1.02: to ensure that arrangements are in place for a timely managed, controlled, coordinated and effective response at the scene and at the local, regional, national and international level to any nuclear or radiological emergency<br>PC1.04: preservation of life, incident stabilization, protection of property | |

| Outcome 2 | LO02 |
|---|---|
| Performance criteria | |
| PC01 | Describe the process to perform a basic radiation risk assessment during later phases of an emergency situation, including decontamination and waste management activities |
| PC02 | Describe potential sources of radiation exposure during later phases of an emergency situation, including decontamination and waste management activities |
| PC03 | Explain methods for measuring dose rates and contamination levels during later phases of an emergency situation |
| Specific evidence requirements | |

Candidate must demonstrate knowledge and understanding of the basic principles of radiation hazard identification and control and the potential sources/effects of radiation. Candidate must demonstrate knowledge and understanding of demonstrating effective preparedness for emergency scenarios.

The following information is provided to aid the training provider in developing the course work
PC2.01: identify radiation sources; evaluate dose rates and contaminations levels; decide who/what may be harmed and how; decide on precautions and implement them; review assessment and update as

| Outcome 3 | LO03 |
|---|---|
| Performance criteria | |
| PC01 | Compare potential health hazards to populations during and after various types of nuclear or radiological emergencies |
| PC02 | Describe potential consequences to the environment following a nuclear or radiological emergency. |
| PC03 | Explain the importance of emergency response plans in building preparedness for threats and hazards. |
| PC04 | Identify the key root causes learned from historical nuclear and radiological emergencies |
| PC05 | List and describe the main consequences, on individuals and on populations, of historical nuclear and radiological emergencies |
| Specific evidence requirements | |

Candidate must demonstrate knowledge and understanding of mitigating actual and potential impact to the environment from radioactive materials, the role of emergency response exercises in testing plans, policies, procedures and capabilities, plus learning from historical radiation accidents and incidents.

The following information is provided to aid the training provider in developing the course work
PC3.03: Test and validate plans, policies, procedures and capabilities
PC3.04 and PC3.04: Nuclear emergencies can include: Chernobyl, Ukraine, 1986; Tokaimura, Japan, 1997/1999; Fukushima, Japan, 2011. Radiological emergencies can include: Goiania, Brasil, 1987; Soreq, Israel, 1990; Gilan, Iran, 1996; Samut Prakarn, Thailand, 2000; Cochabamba, Bolivia 2002; Chilca, Peru 2012; Nueva Aldea, Chile 2009.

| 8. | Range statement | This Unit may be assessed in a simulated environment under conditions that safely replicate workplace emergency situations |
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| 9. | Assessment advice | Assessment must be conducted in an environment where evidence gathered by Learners demonstrates consistent performance in conditions that are safe and replicate a potential accident workplace.<br><br>Assessment methods can include:<br>• Scenario setting<br>• Presentations<br>• Virtual simulations and modelling<br>• Written material and report<br>• Checklists and comparative charts<br>• Statements<br>• Topologies<br>• Evidence of written reports summarising results of candidate skills assessment<br>• Oral or written questioning<br><br>Evidence:<br>• Verbal or written questioning to assess candidate's knowledge<br>• Summative assessment to ensure consistency of performance in a range of contexts<br>• Formative evidence for this unit can be written, oral or diagrammatic<br>• Formative evidence ought to assist learners to learn and increase performance<br>• Summative assessment is based on real live work situations or simulated situations<br><br>Assessors and verifiers must satisfy NQC/VETAC requirements with subject matter expert related to radiation emergency assessment.<br><br>All evidence submitted by the learner must be verified and documented by the assessor for future evaluation purpose.<br><br>Summative assessment is based on real work situations or simulated situations.<br><br>Assessment judgements are based on evidence that is documented as valid, authentic, current, and sufficient, and are consistent with previous judgements made on similar evidence.<br><br>Re-submissions are permissible | |
| 10. | Entry requirements | 10a) Mandatory | Level 4 Award Radiation Emergency Worker Tier 1 |
| | | 10b) Advisory | None |
| 11. | Grading | Percentile 100%: _____% | |
| | | 80% pass mark | |

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| 12. | Resources required | Reference materials related to this unit, for consideration, and which correlate with international nuclear industry acceptance, for working in a workplace environment include:<br>relevant and contemporary reference documents, manuals, instructions, procedures, standards;<br>relevant industry policies and organizational procedures<br>Other reference documents, including:<br>Regulation for Radiation Protection and Predisposal Radioactive Waste Management in Nuclear Facilities (FANR-REG-11)<br>Regulation for Emergency Preparedness and Response for Nuclear Facilities (FANR-REG-12)<br>Requirements for Off-site Emergency Plans for Nuclear Facilities (FANR-REG-15)<br>Basic Safety Standards for Facilities and Activities involving Ionizing Radiation other than in Nuclear Facilities (FANR-REG-24)<br>IAEA Safety Standards Series, Building Competence in Radiation Protection and the Safe Use of Radiation Sources, No. RS-G-1.4<br>IAEA Safety Standards Series, Preparedness and Response for a Nuclear or Radiological Emergency, No. GS-R-2<br>IAEA Safety Standards, Preparedness and Response for a Nuclear or Radiological Emergency, No. GSR Part 7 | |
| 13. | Relevant CoreLife Skills | ☑ Collecting, analysing, organising and applying information in a given context<br>☑ Communicating information, concepts and ideas<br>☑ Initiating and organising self and activities incl. motivation, exploration and creativity<br>☑ Working with others in teams incl. leadership<br>☑ Solving problems incl. using mathematical ideas and techniques<br>☐ Applying information and communication technology (ICT)<br>☐ Participating in social and civic life incl. ethical practice | |
| 14. | Industry sector | 14a) Sector | Community, health and social services |
| | | 14b) Sub-sector | Health Services |
| 15. | Developing organisation | RNDC in Radiation Protection | |
| 16. | Approval date | 01/06/2023 | |
| 17. | Review date | 31/05/2028 | |



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# NQC UAE-NOS TEMPLATE

**For use by developers of UAE national occupational standards (UAE-NOS) packaged as unit standards**

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|---|---|---|---|---|---|
| 1. | Title | Instigate protective measures to safeguard life – Nuclear and Radiation Emergency Worker Tier 2 | | | |
| 2. | Code | HLT04099NU23 | | | |
| 3. | Credit and duration | 3a) Credit value | 1 | 3b) Duration | 15 |
| 4. | Aim | This unit aims to provide Radiation Emergency Workers with intermediate knowledge and skills to respond effectively to preserving life in radiation emergency situations during subsequent phases of a nuclear or a radiological emergency situation | | | |
| 5. | Learning outcomes | At the end of this unit, learners will be able to: | | | |
| | | LO01 | Demonstrate measures to safeguard life during later phases of a radiation emergency situation | | |
| | | LO02 | Demonstrate ability to use personal protective equipment and respiratory protective equipment, and provide support to others | | |
| 6. | QF*Emirates* Level | Level 4 | | | |
| 7. | Outcomes, performance criteria, and evidence requirements | | | | |

| Outcome 1 | LO01 |
|---|---|
| **Performance criteria** | |
| PC01 | Discuss life-saving emergency care activities during the various phases of a radiation emergency situation |
| PC02 | Discuss radiation dose optimization during the various phases of a radiation emergency situation |
| PC03 | Discuss the importance of working effectively as an integral part of a disciplined team with particular emphasis on actions needed during later phases of an emergency situation |
| **Specific evidence requirements** | |

Candidate must demonstrate intermediate knowledge and understanding of the basic principles of preserving life in a radiation emergency.

The following information is provided to aid the training provider in developing the course work:
PC1.03: This can include identifying sources of radiation at the emergency site, decontamination, radioactive waste segregation and management, etc.

| Outcome 2 | LO02 |
|---|---|
| **Performance criteria** | |
| PC01 | Select and discuss the appropriate personal protective equipment for use in later phases of a radiation emergency situation |
| PC02 | Select and discuss the appropriate respiratory protective equipment for use in later phases of a radiation emergency situation |

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| PC03 | Explain and discuss the general application and limitations of an air-purifying respirator |
| PC04 | Explain and discuss the general application and limitations of an air-supplying respirator |
| PC05 | Demonstrate the ability to correctly perform preoperational checks on personal and respiratory protective equipment |
| PC06 | Demonstrate the ability to correctly don, use and doff personal and respiratory protective equipment |
| PC07 | Demonstrate the ability to provide support to others in checking, donning, doffing personal and respiratory protective equipment |
| PC08 | Demonstrate the ability to correctly perform post-operational checks on personal and respiratory protective equipment, including basic decontamination |
| PC09 | Demonstrate the ability to correctly dispose of personal and respiratory protective equipment, including contaminated equipment |

**Specific evidence requirements**

Candidates shall demonstrate knowledge, understanding and practical ability in correctly selecting and using both personal and respiratory protection, and in helping others.
Demonstration must include practical tests on various equipment, in a protected environment, including also help to others.

The following information is provided to aid the training provider in developing the course work
PC2.03: Candidates must understand and explain how wearing respiratory protection equipment may alter the normal perception of space, and may significantly increase fatigue. Candidates must understand and explain the increase in breathing difficulty, due to the use of various respiratory protection. Candidates must be able to explain the consequences of prolonged use of some respiratory protection, and the potential risks.
PC2.03: Candidates must be able to discuss conditions in which personal and respiratory protection should not be used and be discarded
PC2.07: Candidates must explain and discuss situations in which other workers may need help, during emergency operations, and procedures to provide help to others
PC2.08 and 09: Candidates must be able to discuss conditions in which used personal and respiratory protection cannot not be used anymore and must be discarded, how to decontaminate some equipment, and how to properly dispose of contaminated unusable equipment.

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| 8. | Range statement | This Unit may be assessed in a simulated environment under conditions that safely replicate workplace emergency situations.Practical experience in donning, using and doffing personal and respiratory protective equipment must be provided.Practical experience in helping other workers (using personal or respiratory protection) during emergency operations must be provided. |

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| 9. | Assessment advice | Assessment must be conducted in an environment where evidence gathered by Learners demonstrates consistent performance in conditions that are safe and replicate a potential accident workplace.<br><br>Assessment methods can include:<br>• Scenario setting<br>• Presentations<br>• Virtual simulations and modelling<br>• Written material and report<br>• Checklists and comparative charts<br>• Statements<br>• Topologies<br>• Evidence of written reports summarizing results of candidate skills assessment<br>• Oral or written questioning<br><br>Evidence:<br>• Verbal or written questioning to assess candidate's knowledge<br>• Summative assessment to ensure consistency of performance in a range of contexts<br>• Formative evidence for this unit can be written, oral or diagrammatic<br>• Formative evidence ought to assist learners to learn and increase performance<br>• Summative assessment is based on real live work situations or simulated situations<br><br>Assessors and verifiers must satisfy NQC/VETAC requirements with subject matter expert related to radiation emergency assessment.<br><br>All evidence submitted by the learner must be verified and documented by the assessor for future evaluation purpose.<br><br>Summative assessment is based on real work situations or simulated situations.<br><br>Assessment judgements are based on evidence that is documented as valid, authentic, current, and sufficient, and are consistent with previous judgements made on similar evidence.<br><br>Re-submissions are permissible | |
| 10. | Entry requirements | 10a) Mandatory | Level 4 Award Radiation Emergency Workers Tier 1 |
| | | 10b) Advisory | None |
| 11. | Grading | Percentile 100%: _____% | |
| | | 80% pass mark | |

| | | | |
|---|---|---|---|
| 12. | Resources required | Reference materials related to this unit, for consideration, and which correlate with international nuclear industry acceptance, for working in a workplace environment include:<br>relevant and contemporary reference documents, manuals, instructions, procedures, standards;<br>relevant industry policies and organizational procedures<br>Other reference documents, including:<br>Regulation for Radiation Protection and Predisposal Radioactive Waste Management in Nuclear Facilities (FANR-REG-11)<br>Regulation for Emergency Preparedness and Response for Nuclear Facilities (FANR-REG-12)<br>Requirements for Off-site Emergency Plans for Nuclear Facilities (FANR-REG-15)<br>Basic Safety Standards for Facilities and Activities involving Ionizing Radiation other than in Nuclear Facilities (FANR-REG-24)<br>IAEA Safety Standards Series, Building Competence in Radiation Protection and the Safe Use of Radiation Sources, No. RS-G-1.4<br>IAEA Safety Standards Series, Preparedness and Response for a Nuclear or Radiological Emergency, No. GS-R-2<br>IAEA Safety Standards, Preparedness and Response for a Nuclear or Radiological Emergency, No. GSR Part 7 | |
| 13. | Relevant CoreLife Skills | ☑ Collecting, analysing, organising and applying information in a given context<br>☑ Communicating information, concepts and ideas<br>☑ Initiating and organising self and activities incl. motivation, exploration and creativity<br>☑ Working with others in teams incl. leadership<br>☑ Solving problems incl. using mathematical ideas and techniques<br>☐ Applying information and communication technology (ICT)<br>☐ Participating in social and civic life incl. ethical practice | |
| 14. | Industry sector | 14a) Sector | Community, health and social services |
| | | 14b) Sub-sector | Health Services |
| 15. | Developing organisation | RNDC in Radiation Protection | |
| 16. | Approval date | 01/06/2023 | |
| 17. | Review date | 31/05/2028 | |



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# NQC UAE-NOS TEMPLATE

**For use by developers of UAE national occupational standards (UAE-NOS) packaged as unit standards**

| | | | | | |
|---|---|---|---|---|---|
| 1. | Title | Conduct radiation measurements during emergency situations - Nuclear and Radiation Emergency Worker Tier 2 | | | |
| 2. | Code | HLT04101NU23 | | | |
| 3. | Credit and duration | 3a) Credit value | 1 | 3b) Duration | 15 |
| 4. | Aim | This unit aims to provide Radiation Emergency Workers with intermediate knowledge and skills to properly conduct radiation measurements during later phases of a nuclear or a radiological emergency situation | | | |
| 5. | Learning outcomes | At the end of this unit, learners will be able to: | | | |
| | | LO01 | Perform accurate radiation measurements | | |
| | | LO02 | Manage radiological monitoring | | |
| 6. | QF*Emirates* Level | Level 4 | | | |
| 7. | Outcomes, performance criteria, and evidence requirements | | | | |

| Outcome 1 | LO01 |
|---|---|
| **Performance criteria** | |
| PC01 | Select the appropriate instrument/technique for radiation fields and situations encountered during later phases of a radiation emergency situation |
| PC02 | Demonstrate how to check the status and functioning of instrumentation, prior to their use |
| PC03 | Demonstrate how to measure radiation fields and samples, according to applicable standards and procedures |
| PC04 | Demonstrate the correct use of neutron and gamma dose rate meters |
| PC05 | Demonstrate the correct use of direct contamination meters, including explaining how to distinguish alpha from beta/gamma contamination |
| PC06 | Demonstrate the correct execution of the smear test indirect contamination testing, including explaining how to quantify alpha from beta/gamma contamination |
| PC07 | Correctly use spectrometers, including determination of activity for various radionuclides, during later phases of an emergency situation |
| PC08 | Describe how to calculate measurements uncertainty |
| **Specific evidence requirements** | |
| Candidate must demonstrate intermediate knowledge, understanding and ability in direct and indirect radiation measurements, including smear tests and spectrometry.<br><br>Practical experience in radiation measurements must be provided. | |

| Outcome 2 | LO02 |
|---|---|
| **Performance criteria** | |
| PC01 | Explain how to conduct a comprehensive radiation survey in the environment and document the associated results |
| PC02 | Interpret personal dosimeter readings, including how to express radiation doses |
| PC03 | Describe the function of a radiation monitoring systems and their use during later phases of a radiation emergency situation |
| PC04 | Demonstrate the ability to conduct radiological environmental monitoring, including all the following: • Performing surface contamination measurements and assessing surface concentration of activity • Performing contamination measurements in liquid and gaseous volumes, and assessing concentration of activity in air and water |
| PC05 | Identify radionuclides, including their activity, in environmental and workplace samples |
| **Specific evidence requirements** | |
| Candidates shall demonstrate intermediate knowledge in performing direct and indirect radiation measurements in the environment, and interpreting their results.<br><br>The following information is provided to aid the training provider in developing the course work<br>PC2.01: the survey must indicate presence of radioactivity at levels around 0.37 Bq/cm2 and 0.037 Bq/cm2 for beta/gamma and alpha emitting radionuclides respectively. Geo referencing should be intended as using a GPS device, whose use must also be demonstrated. | |

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| **8.** | Range statement | This Unit may be assessed in a simulated environment under conditions that safely replicate workplace emergency situations.<br>Practical experience in dealing with decontamination work and radioactive waste management must be provided. |

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|---|---|---|---|
| 9. | Assessment advice | Assessment must be conducted in an environment where evidence gathered by Learners demonstrates consistent performance in conditions that are safe and replicate a potential accident workplace.<br><br>Assessment methods can include:<br>• Scenario setting<br>• Presentations<br>• Virtual simulations and modelling<br>• Written material and report<br>• Checklists and comparative charts<br>• Statements<br>• Topologies<br>• Evidence of written reports summarising results of candidate skills assessment<br>• Oral or written questioning<br><br>Evidence:<br>• Verbal or written questioning to assess candidate's knowledge<br>• Summative assessment to ensure consistency of performance in a range of contexts<br>• Formative evidence for this unit can be written, oral or diagrammatic<br>• Formative evidence ought to assist learners to learn and increase performance<br>• Summative assessment is based on real live work situations or simulated situations<br><br>Assessors and verifiers must satisfy NQC/VETAC requirements with subject matter expert related to radiation emergency assessment.<br><br>All evidence submitted by the learner must be verified and documented by the assessor for future evaluation purpose.<br><br>Summative assessment is based on real work situations or simulated situations.<br><br>Assessment judgements are based on evidence that is documented as valid, authentic, current, and sufficient, and are consistent with previous judgements made on similar evidence.<br><br>Re-submissions are permissible | |
| 10. | Entry requirements | 10a) Mandatory | Level 4 Award Radiation Emergency Worker Tier 1 |
| | | 10b) Advisory | None |
| 11. | Grading | Percentile 100%: _____% | |
| | | 80% pass mark | |

| | | | |
|---|---|---|---|
| 12. | Resources required | Reference materials related to this unit, for consideration, and which correlate with international nuclear industry acceptance, for working in a workplace environment include:<br>relevant and contemporary reference documents, manuals, instructions, procedures, standards;<br>relevant industry policies and organizational procedures<br>Other reference documents, including:<br>Regulation for Radiation Protection and Predisposal Radioactive Waste Management in Nuclear Facilities (FANR-REG-11)<br>Regulation for Emergency Preparedness and Response for Nuclear Facilities (FANR-REG-12)<br>Requirements for Off-site Emergency Plans for Nuclear Facilities (FANR-REG-15)<br>Basic Safety Standards for Facilities and Activities involving Ionizing Radiation other than in Nuclear Facilities (FANR-REG-24)<br>IAEA Safety Standards Series, Building Competence in Radiation Protection and the Safe Use of Radiation Sources, No. RS-G-1.4<br>IAEA Safety Standards Series, Preparedness and Response for a Nuclear or Radiological Emergency, No. GS-R-2<br>IAEA Safety Standards, Preparedness and Response for a Nuclear or Radiological Emergency, No. GSR Part 7 | |
| 13. | Relevant CoreLife Skills | ☑ Collecting, analysing, organising and applying information in a given context<br>☑ Communicating information, concepts and ideas<br>☑ Initiating and organising self and activities incl. motivation, exploration and creativity<br>☑ Working with others in teams incl. leadership<br>☑ Solving problems incl. using mathematical ideas and techniques<br>☐ Applying information and communication technology (ICT)<br>☐ Participating in social and civic life incl. ethical practice | |
| 14. | Industry sector | 14a) Sector | Community, health and social services |
| | | 14b) Sub-sector | Health Services |
| 15. | Developing organisation | RNDC in Radiation Protection | |
| 16. | Approval date | 01/06/2023 | |
| 17. | Review date | 31/05/2028 | |



HLTN23

UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

# NQC UAE-NOS TEMPLATE

**For use by developers of UAE national occupational standards (UAE-NOS) packaged as unit standards**

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|---|---|---|---|---|---|---|
| 1. | Title | Perform decontamination on people and facilities – Nuclear and Radiation Emergency Worker Tier 2 | | | | |
| 2. | Code | HLT04100NU23 | | | | |
| 3. | Credit and duration | 3a) Credit value | 1 | 3b) Duration | 15 | |
| 4. | Aim | This unit aims to provide Radiation Emergency Workers with intermediate knowledge and skills to perform decontamination of people or facilities during later phases of a nuclear or a radiological emergency situation, with specific emphasis on radioactive waste management | | | | |
| 5. | Learning outcomes | At the end of this unit, learners will be able to: | | | | |
| | | LO01 | Describe radioactive contamination in various matrices | | | |
| | | LO02 | Describe decontamination of people and facilities | | | |
| | | LO03 | Manage decontamination processes | | | |
| | | LO04 | Describe safe management of radioactive waste | | | |
| 6. | QF*Emirates* Level | Level 4 | | | | |
| 7. | Outcomes, performance criteria, and evidence requirements | | | | | |

| Outcome 1 | LO01 |
|---|---|
| **Performance criteria** | |
| PC01 | Describe the various types of radioactive contamination during an emergency situation, and specifically those present in later phases of a radiation emergency |
| PC02 | Describe various residual radioactive contamination matrices in later phases of a radiation emergency |
| PC03 | Describe and discuss quantities and units used to quantify radioactive contamination in various matrices |
| **Specific evidence requirements** | |

Candidate must demonstrate intermediate knowledge and understanding of radioactive contamination and decontamination in a radiation emergency.

The following information is provided to aid the Training Provider in developing the course work:
PC1.01: fixed, removable, surface, airborne, volume, etc. radioactive contamination
PC1.02: including environmental contamination
PC1.03: Candidates should demonstrate to understand the magnitude of radioactive contamination when expressed in Bq/cm2, Bq/km2, Bq/L, Bq/m3, and any other units used in a specific context; and to be able to convert values from one unit to another one
PC1.04: e.g.: soil removal, decontamination of areas and surfaces, etc.

| Outcome 2 | LO02 |
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| **Performance criteria** | |
| PC01 | Describe the purpose and organization of decontamination activities to be performed in later phases of a radiation emergency |
| PC02 | Describe and discuss techniques used to prevent the spread of contamination during decontamination work performed in later phases of a radiation emergency |
| PC03 | Describe how to define the extent of the location for a decontamination work performed in later phases of a radiation emergency |
| PC04 | Describe protocols in handling radioactive waste materials arising from decontamination work performed in later phases of a radiation emergency |
| **Specific evidence requirements** | |
| Candidates shall demonstrate knowledge and understanding of decontamination of people and facilities in later phases of a radiation emergency.<br>.<br><br>The following information is provided to aid the training provider in developing the course work<br>PC2.03: appropriate radiation measurements to define the shape and extent of the contaminated area, measurements needed before and after decontamination to evaluate decontamination effectiveness (decontamination factor)<br>PC2.04: as a minimum, this should include identification, minimization, segregation, labeling, characterization, handling, transportation and storage | |

| Outcome 3 | LO03 |
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| **Performance criteria** | |
| PC01 | Explain various decontamination techniques and their range of applicability |
| PC02 | Demonstrate how to perform skin decontamination |
| PC03 | Demonstrate how to perform decontamination of clothing and other small personal equipment, including personal protective equipment |
| PC04 | Demonstrate how to decontaminate areas, facilities and large equipment, in later phases of a radiation emergency |
| PC05 | Demonstrate how to decontaminate soil or the environment, in later phases of a radiation emergency |
| PC06 | Explain how to conduct a contamination survey and appropriately document survey results |
| **Specific evidence requirements** | |

Candidates shall demonstrate in-depth knowledge, understanding and practical ability in decontamination of people, clothing, equipment, areas, materials, the environment.

The following information is provided to aid the training provider in developing the course work
PC3.02: state the objectives of skin decontamination (decreasing the risk of acute dermal injury; lowering the risk of internal contamination; reducing the potential of contaminating medical personnel and the environment); state the phases of skin decontamination (washing with lukewarm water, use of neutral soap, use of chemical chelating agents, rubbing (risks and procedure), seeking medical help); demonstrate procedures of skin decontamination
PC3.04: describe various decontamination techniques (scrubbing, scarification, water jet, sand blast, chelating agents, etc.) and when to use them; describe the execution of a decontamination process
PC3.05: describe various decontamination techniques available and when to use them; describe execution of a decontamination process

| Outcome 4 | LO04 |
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| **Performance criteria** | |
| PC01 | Describe the classification of radioactive waste in the UAE |
| PC02 | Discuss the measures needed to identify materials as "radioactive waste" or "clearable material" |
| PC03 | Describe and discuss the different phases of radioactive waste management in later phases of a radiation emergency |
| PC04 | Describe radioactive waste sorting |
| PC05 | Describe radioactive waste packaging |
| PC06 | Describe radioactive waste characterization |
| PC07 | Describe radioactive waste labeling |
| PC08 | Describe radioactive waste transportation |
| **Specific evidence requirements** | |

Candidates shall demonstrate knowledge, understanding and practical ability in the classification and management of radioactive waste originating from work activities in later phases of a radiation emergency.

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| 8. | Range statement | This Unit may be assessed in a simulated environment under conditions that safely replicate workplace emergency situations.Practical experience in dealing with decontamination work and radioactive waste management must be provided. |

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| 9. | Assessment advice | Assessment must be conducted in an environment where evidence gathered by Learners demonstrates consistent performance in conditions that are safe and replicate a potential accident workplace.<br><br>Assessment methods can include:<br>• Scenario setting<br>• Presentations<br>• Virtual simulations and modelling<br>• Written material and report<br>• Checklists and comparative charts<br>• Statements<br>• Topologies<br>• Evidence of written reports summarising results of candidate skills assessment<br>• Oral or written questioning<br><br>Evidence:<br>• Verbal or written questioning to assess candidate's knowledge<br>• Summative assessment to ensure consistency of performance in a range of contexts<br>• Formative evidence for this unit can be written, oral or diagrammatic<br>• Formative evidence ought to assist learners to learn and increase performance<br>• Summative assessment is based on real live work situations or simulated situations<br><br>Assessors and verifiers must satisfy NQC/VETAC requirements with subject matter expert related to radiation emergency assessment.<br><br>All evidence submitted by the learner must be verified and documented by the assessor for future evaluation purpose.<br><br>Summative assessment is based on real work situations or simulated situations.<br><br>Assessment judgements are based on evidence that is documented as valid, authentic, current, and sufficient, and are consistent with previous judgements made on similar evidence.<br><br>Re-submissions are permissible | |
| 10. | Entry requirements | 10a) Mandatory | Level 4 Award Radiation Emergency Worker Tier 1 |
| | | 10b) Advisory | None |
| 11. | Grading | Percentile 100%: _____% | |
| | | 80% pass mark | |

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| 12. | Resources required | Reference materials related to this unit, for consideration, and which correlate with international nuclear industry acceptance, for working in a workplace environment include:<br>relevant and contemporary reference documents, manuals, instructions, procedures, standards;<br>relevant industry policies and organizational procedures<br>Other reference documents, including:<br>Regulation for Radiation Protection and Predisposal Radioactive Waste Management in Nuclear Facilities (FANR-REG-11)<br>Regulation for Emergency Preparedness and Response for Nuclear Facilities (FANR-REG-12)<br>Requirements for Off-site Emergency Plans for Nuclear Facilities (FANR-REG-15)<br>Basic Safety Standards for Facilities and Activities involving Ionizing Radiation other than in Nuclear Facilities (FANR-REG-24)<br>IAEA Safety Standards Series, Building Competence in Radiation Protection and the Safe Use of Radiation Sources, No. RS-G-1.4<br>IAEA Safety Standards Series, Preparedness and Response for a Nuclear or Radiological Emergency, No. GS-R-2<br>IAEA Safety Standards, Preparedness and Response for a Nuclear or Radiological Emergency, No. GSR Part 7 | |
| 13. | Relevant CoreLife Skills | ☑ Collecting, analysing, organising and applying information in a given context<br>☑ Communicating information, concepts and ideas<br>☑ Initiating and organising self and activities incl. motivation, exploration and creativity<br>☑ Working with others in teams incl. leadership<br>☑ Solving problems incl. using mathematical ideas and techniques<br>☐ Applying information and communication technology (ICT)<br>☐ Participating in social and civic life incl. ethical practice | |
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