

# Consultation draft Apprenticeship Standard

## Nuclear Health Physics Monitor (Level 2)

### Overview of the role

Providing radiological monitoring services in the nuclear industry to protect people, plant and the environment from radioactive contamination.

### Core and options

No

### Route

Engineering and manufacturing

### Typical duration of apprenticeship

24 months

### Does professional recognition exist for the occupation?

Yes

### Occupation summary

This occupation is found in the nuclear sector on a range of sites including waste management, decommissioning, and operational nuclear facilities. Their working conditions are varied and may involve wearing specialist safety equipment, shift working and working on sites and facilities running 365 day operations. They are expected to work independently and as part of a team. They need to be able to work with minimum supervision, in a professional manner, taking responsibility for the quality and accuracy of the work they undertake. People working on nuclear sites are required to undergo security clearance vetting.

The broad purpose of the occupation is to provide radiological monitoring services within the nuclear industry to protect people, plant and the environment. It is to provide protection from the adverse effects of ionising radiation and contamination. They may work indoors or outdoors, work at height or in confined spaces. They may be required to work shifts and in hazardous areas.

In their daily work, an employee in this occupation interacts with other engineers, technicians and visiting staff present on a nuclear site. They work independently or as part of the larger team. They typically work under both supervised and unsupervised direction of an engineer, technician or health physics supervisor.

An employee in this occupation will comply with regulatory and organisational requirements. They must work within the specified health, safety, and environmental

regulations. They must use the appropriate protective clothing, equipment and resources. They are responsible for the correct use and control of equipment. They must follow organisationally defined and approved procedures when carrying out monitoring of nuclear related systems and people. All work must be completed safely and efficiently as directed by supervisory staff.

### **Typical job titles**

**Health physics monitor      Health physics surveyor**

### **Are there any statutory/regulatory or other typical entry requirements?**

No

## Occupation duties

DUTY	KSB
<b>Duty 1</b> Apply radiological and contamination control measures prior to, during and after commencing work.	K3 K5 K8 K9 K10 S6 B1 B2 B3
<b>Duty 2</b> Monitor surface and airborne contamination and radiation dose rates using radiological instruments.	K9 K10 K11 K12 K13 S5 S7 S8 B1 B2 B3
<b>Duty 3</b> Complete ionising radiation and contamination surveys in compliance with organisational requirements.	K13 K15 S1 S2 S5 S10 B1 B2 B3 B7
<b>Duty 4</b> Undertake monitoring of personnel activities during radiologically implicated tasks and at barriers, entry and exit areas.	K2 K4 K9 K10 K14 K20 S3 S7 B1 B2 B3 B6 B8
<b>Duty 5</b> Carry out radiological barrier integrity checks.	K9 K10 S3 S6 S13 S14 B1 B2 B3
<b>Duty 6</b> Perform checks and testing of monitors and detectors against radioactive sealed sources.	K12 K13 S5 S7 B1 B2 B3
<b>Duty 7</b> Monitor waste, used personal protective equipment (PPE) and equipment leaving the site. Ensure compliance to conditions for acceptance at receiving sites.	S2 S4 B1 B2 B3
<b>Duty 8</b> Document radiation and contamination monitoring survey results. Use written reports and digital systems as required.	K13 K17 K19 K20 S5 S14 S15 B2 B7
<b>Duty 9</b> Support decontamination of personnel in the event of becoming contaminated. For example, emergency showers.	K9 K10 K14 K18 S3 S13 S14 B1 B2 B3 B8
<b>Duty 10</b> Ensure radioactive sources and materials are accounted for in line with local arrangements and location.	K9 K10 K12 K17 S2 S5 S10 S13 S14 B1 B2 B3
<b>Duty 11</b> Monitor radiation and contamination levels during radiation incidents and events.	K3 K13 K14 K20 S6 S9 S13 S14 B1 B2 B3
<b>Duty 12</b> Support facility and site contingency plans including emergency arrangements for protection of personnel, plant and the environment.	K3 K4 K5 K6 K14 K16 S6 S9 S12 S13 S14 B1 B2 B3 B5 B6 B8
<b>Duty 13</b> Produce radiological protection monitoring information.	K12 K15 K18 K19 K20 S5 S11 S13 S14 S15 B2 B3 B4

**DUTY****KSB**

**Duty 14** Provide information of radiological hazards and risks in routine and incident situations. For example, appropriate guidance to personnel involved in incidents or events.

K1 K3 K5 K7 K18 K19  
S13 S14  
B1 B2 B6

**Duty 15** Direct colleagues on appropriate actions relating to radiation protection.

K1 K2 K3 K4 K5 K7 K14 K18 K19 K21  
S12 S13 S14  
B1 B2 B5 B6 B8

# Knowledge, Skills & Behaviours

## Knowledge

- K1:** Awareness of nuclear safety: prevention of accidents, protection of people and the environment from radiation hazards.
- K2:** Awareness of radiological safety: protection of people and the environment from the harmful effects of ionising radiation and contamination.
- K3:** Safety expectations of those working on nuclear licensed sites: Confined spaces, Health and safety at work act. Control of Substances Hazardous to Health (COSHH). Manual handling. Personal Protective Equipment (PPE). Situational awareness. Isolation and emergency stop procedures. Emergency evacuation procedures. Slips, trips and falls. Safety equipment: guards, signage, fire extinguishers. Safe systems of working. Working at height.
- K4:** Security clearances and levels of personnel on nuclear licensed sites: basic clearance (BC), security clearance (SC) and developed vetting (DV) enhanced clearance.
- K5:** Awareness of safety management systems: standard operating procedures (SOPs) and risk assessments. Principles of As Low As Reasonably Practicable (ALARP).
- K6:** Environment and sustainability regulations and guidance. Types of pollution and control measures in the nuclear sector, including spills and waste. Waste reduction and waste streams. Recycling and reuse. Sustainable use of equipment and materials.
- K7:** Awareness of how human performance and human factors affect nuclear safety culture.
- K8:** Awareness of radiation types: non-ionising and ionising radiation, alpha, beta, gamma, x-ray and neutron. Atomic structure, criticality, fusion and fission.
- K9:** Types of radiation sources and materials.
- K10:** Control measures for radiation sources and materials, and associated hazards.
- K11:** Identification and purpose of radiological monitoring instruments: measurement and referencing levels of ionising radiation detection.
- K12:** Testing of radiological monitoring instruments using calibrated and sealed radiation sources.
- K13:** Numerical calculation techniques for radiological data.
- K14:** Emergency response radiological incident contingency plans: emergency environmental radiological releases; critical incident monitoring; forward control points (FCP) and access control points (ACP).
- K15:** Regulatory and legislative procedures: Ionising Radiation Regulations (IRR); Radiation (Emergency Preparedness and Public Information) Regulations (REPPPIR)
- K16:** Principles of team working.
- K17:** Documentation and reporting requirements.
- K18:** Verbal communication techniques.
- K19:** Written communication techniques.
- K20:** Information technology and digital systems: email, management information systems, word processing, work sharing platforms. General data protection regulation (GDPR). Cyber security.
- K21:** Principles of equity, diversity, and inclusion in the workplace and the impact on their work.

## Skills

- S1:** Comply with health and safety regulations and procedures.
- S2:** Follow work instructions. For example, standard operating procedures (SOPs), risk assessments.

- S3:** Respond to changes in radiological conditions using as low as reasonably practicable principles (ALARP).
- S4:** Comply with environmental and sustainability regulations and procedures. For example, identify and segregate resources for reuse, recycling and disposal.
- S5:** Identification of radiation sources and materials.
- S6:** Select and use radiological protection monitoring instruments: for example, hand held radiation and contamination rate meters, installed and portable air samplers.
- S7:** Carry out functional tests of radiation protection monitoring instrumentation using calibrated radioactive sealed sources.
- S8:** Perform numerical calculations for radiological measurements.
- S9:** Comply with emergency response plans; carry out critical incident monitoring; use forward control points (FCP) and access control points (ACP) to respond and recover from nuclear incidents.
- S10:** Comply with legislative regulations and procedures. For example, Ionising Radiation Regulations (IRR); Radiation (Emergency Preparedness and Public Information) Regulations (REPPPIR).
- S11:** Record radiation protection monitoring and survey results using required documentation.
- S12:** Apply team working principles.
- S13:** Communicate verbally with colleagues and managers using industry terminology.
- S14:** Communicate in writing with colleagues and managers.
- S15:** Use information technology and digital systems. Comply with GDPR and cyber security.

## **Behaviours**

- B1:** Put health and safety first.
- B2:** Take ownership of own work and responsibilities.
- B3:** Take responsibility for the quality of work.
- B4:** Respond and adapt to changing work requests.
- B5:** Demonstrate team focus to meet work goals.
- B6:** Apply human performance and human factors principles in the workplace.
- B7:** Seek learning and development opportunities, continual professional development (CPD).
- B8:** Support an inclusive workplace, being respectful of different views.

# Qualifications

## English and Maths

English and maths qualifications form a mandatory part of all apprenticeships and must be completed before an apprentice can pass through gateway. The requirements are detailed in the current version of the apprenticeship funding rules.

## Does the apprenticeship need to include any mandated qualifications in addition to the above-mentioned English and maths qualifications?

Yes

## Other mandatory qualifications

IOSH Working Safely

Level: 2

Additional information: The IOSH Working Safely qualification will be undertaken early in the apprenticeship to give a standard introduction to underpinning knowledge of health and safety throughout the apprenticeship and beyond. It is a 5 guided learning hours (GLH) qualification.

## Professional recognition

This standard aligns with the following professional recognition:

- Society for Radiological Protection for Associate

## Involved employers

Sellafield Ltd, EDF, Westinghouse, National Nuclear Laboratory, Nuclear Waste Services, Cavendish Nuclear, Nuvia, AWE, Babcock International, NSAN