



Radiation Protection Level 1

2 days

12 training hours

08:30 to 16:00 daily

20 scheduled dates

An introductory, foundation-level programme for personnel who work with, or may be exposed to, ionising radiation. It builds a practical understanding of radiation hazards, exposure pathways, measurement and the core protection principles of time, distance and shielding, personal monitoring, controlled areas, contamination control, safe source handling and emergency response.

Course objectives

This programme builds the practical capability to plan, control and evaluate the work it covers, to a standard the delegate's own organisation can rely on. By the end of the 2 days, delegates should be able to:

- Explain the basic concepts, types and sources of ionising radiation.
- Describe the biological effects of radiation exposure and basic dose terminology.
- Apply the principles of time, distance and shielding and the ALARA approach to reduce exposure.
- Understand personal monitoring, dosimetry and radiation survey instruments.
- Apply controlled-area, contamination-control and safe source-handling measures.
- Respond appropriately to radiation incidents and follow workplace radiation protection procedures.

Learning outcomes

On successful completion of the course, delegates will be able to:

- Explain the basic concepts and characteristics of ionising radiation.
- Distinguish between ionising and non-ionising radiation.
- Understand how radiation interacts with matter and living tissue.
- Understand basic radiation dose and measurement terminology.
- Apply the principles of time, distance and shielding to reduce radiation exposure.
- Identify common radiation hazards in the workplace.
- Recognise common radiation detection and survey instruments.
- Apply basic contamination-control measures.
- Recognise appropriate responses to radiation incidents and emergencies.
- Understand the importance of complying with applicable regulatory requirements.
- Identify the main types and sources of ionising radiation.
- Explain basic atomic structure and radioactivity.
- Describe the potential biological effects of radiation exposure.
- Explain the fundamental principles of radiation protection.
- Explain the ALARA principle and its practical application.
- Understand personal radiation monitoring and dosimetry.
- Understand the purpose of controlled and supervised areas.
- Understand safe handling, storage and security principles for radioactive sources.
- Understand the importance of following workplace radiation protection procedures.

Who should attend

Radiation workers and users, new or prospective radiation workers, and laboratory, medical and industrial personnel working with radioactive materials or radiation-producing equipment. It also suits mining and mineral-processing personnel, industrial radiographers and NDT personnel, SHEQ and occupational health and safety professionals, radiation safety personnel, and supervisors and managers responsible for radiation-related activities.

RECOMMENDED ENTRY LEVEL

No advanced technical qualification is required. Delegates should have basic literacy and numeracy, a general understanding of workplace health and safety, and a work-related need for radiation protection knowledge. This is foundational training and is not a replacement for a statutory licence, a Radiation Protection Officer qualification or other legally mandated certification; requirements vary by country, industry and role, and should be confirmed with the relevant radiation protection authority.

Course modules at a glance

Module	Topic	Main competency
01	Fundamentals of radiation	Distinguishes radiation types and sources and separates exposure from contamination.
02	Radiation sources and hazard identification	Identifies workplace radiation sources, signs and hazards.
03	Radiation units and measurement	Reads dose and dose-rate terminology and basic survey readings.
04	Biological effects of radiation	Explains deterministic and stochastic effects and the case for dose control.
05	Principles of radiation protection	Applies justification, optimisation, dose limitation and ALARA.
06	Time, distance and shielding	Uses time, distance and shielding to reduce exposure in practice.
07	Radiation monitoring and dosimetry	Uses personal and area monitoring and interprets basic results.
08	Controlled areas and workplace safety	Works safely within controlled and supervised areas and permits.
09	Contamination control	Prevents, detects and responds to radioactive contamination.
10	Safe handling, storage and security of sources	Handles, stores and secures radioactive sources correctly.
11	Radiation emergencies and incident response	Takes correct immediate actions and reports radiation incidents.
12	Radiation protection responsibilities	Understands worker, supervisor and management radiation duties.

The 2 day programme

Each training day runs 08:30 to 16:00 with morning and afternoon breaks and a lunch break. Timings can be adjusted to suit an in house group or a client's shift pattern.

Day 1: Fundamentals of radiation and radiation protection

Time	Session	Key topics	Activity
08:30 to 09:00	Registration, introductions and orientation	Participant and trainer introductions, course objectives and programme overview	Pre-course knowledge assessment
09:00 to 10:00	Module 1: Fundamentals of radiation	Ionising and non-ionising radiation, atomic structure, radioactivity and decay, types of ionising radiation, natural and artificial sources, exposure versus contamination	
10:00 to 10:15	Tea break		
10:15 to 11:15	Module 2: Radiation sources and hazard identification	Sealed and unsealed sources, X-ray equipment, industrial and medical applications, radiation warning signs, identifying workplace hazards	Hazard identification exercise
11:15 to 12:15	Module 3: Radiation units and measurement	Activity, half-life, absorbed, equivalent and effective dose, dose rate, radiation units, background radiation, basic survey measurements	Review of sample radiation readings
12:15 to 13:00	Module 4: Biological effects of radiation	Biological interaction, cellular effects, acute and chronic exposure, deterministic and stochastic effects, occupational exposure	
13:00 to 14:00	Lunch		
14:00 to 15:00	Module 5: Principles of radiation protection	Justification, optimisation, dose limitation, ALARA, exposure pathways, exposure-control measures, worker responsibilities	
15:00 to 15:15	Tea break		
15:15 to 16:00	Module 6: Time, distance and shielding	Exposure time, distance, shielding principles and materials, practical exposure reduction	Group exposure-reduction exercise

WHAT DELEGATES TAKE AWAY FROM DAY 1

- Distinguish the main types and sources of ionising radiation.
- Read basic radiation dose and measurement terminology.
- Apply time, distance and shielding to reduce exposure.

Day 2: Monitoring, safety and emergency response

Time	Session	Key topics	Activity
08:30 to 09:00	Day 1 review and knowledge check	Review of key concepts and workplace application	Knowledge check

Time	Session	Key topics	Activity
09:00 to 10:00	Module 7: Radiation monitoring and dosimetry	Personal monitoring, dosimeters, area monitoring, survey meters, dose-rate measurements, interpreting results, reporting abnormal readings	Review of monitoring results
10:00 to 10:15	Tea break		
10:15 to 11:15	Module 8: Controlled areas and workplace safety	Controlled and supervised areas, access control, warning signs, barriers, safe working procedures, radiation work permits, responsibilities	
11:15 to 12:15	Module 9: Contamination control	External and internal contamination, pathways, prevention, protective clothing, contamination monitoring, decontamination, waste considerations	Simulated contamination scenario
12:15 to 13:00	Module 10: Safe handling, storage and security	Safe source handling, storage, security, inventory, labelling, access control, missing or damaged source procedures	
13:00 to 14:00	Lunch		
14:00 to 15:00	Module 11: Radiation emergency and incident response	Radiation incidents, unexpected exposure, source loss or damage, immediate response, securing the area, notification, incident reporting, emergency preparedness	Simulated radiation incident response
15:00 to 15:15	Tea break		
15:15 to 15:45	Module 12: Practical radiation protection exercise	Hazard identification, exposure control, time distance and shielding, personal monitoring, controlled-area requirements, contamination control, emergency response, radiation risk assessment	Integrated workplace scenarios
15:45 to 16:00	Final assessment, review and close	Review of key learning points and workplace implementation	Final assessment and course evaluation

WHAT DELEGATES TAKE AWAY FROM DAY 2

- Use personal monitoring and dosimetry and interpret basic results.
- Apply controlled-area and contamination-control measures.
- Respond to a radiation incident and report it correctly.

How the course is taught

The programme is run as practical, competency based training rather than a series of presentations, so delegates rehearse the tasks they are expected to perform in their own working environment. Methods used include:

Instructor-led presentations

Interactive discussions

Workplace examples

Case studies

Group exercises

Practical demonstrations

Knowledge checks

Risk-assessment exercises

Emergency scenarios

Question and answer sessions

Final assessment

How delegates are assessed

Formative

- Pre-course knowledge assessment
- Daily knowledge checks

Practical

- Hazard identification and radiation risk-assessment exercises
- Time, distance and shielding scenarios
- Monitoring and contamination-control exercises
- Radiation incident response scenario

Summative

- Written assessment
- Final knowledge assessment

Dates, venues and fees

The programme runs at 20 scheduled dates across the BMC Training network. Every date below is open for registration.

Dates	Venue	Days	Fee per delegate
5 to 6 Oct 2026	Johannesburg	2 days	R10,000
6 to 7 Oct 2026	Nairobi	2 days	US\$1,100
12 to 13 Oct 2026	Pretoria	2 days	R10,000
13 to 14 Oct 2026	Dar es Salaam	2 days	US\$1,100
19 to 20 Oct 2026	Cape Town	2 days	R10,000
20 to 21 Oct 2026	Lusaka	2 days	US\$1,100
26 to 27 Oct 2026	Durban	2 days	R10,000
27 to 28 Oct 2026	Harare	2 days	US\$1,100
3 to 4 Nov 2026	Accra	2 days	US\$1,100
4 to 5 Nov 2026	Kigali	2 days	US\$1,100
10 to 11 Nov 2026	Lagos	2 days	US\$1,100
11 to 12 Nov 2026	Kampala	2 days	US\$1,100
17 to 18 Nov 2026	Cairo	2 days	US\$1,100
18 to 19 Nov 2026	Windhoek	2 days	US\$1,100
24 to 25 Nov 2026	Dubai	2 days	US\$1,100
25 to 26 Nov 2026	Gaborone	2 days	US\$1,100
1 to 2 Dec 2026	Online	2 days	US\$900

Dates	Venue	Days	Fee per delegate
8 to 9 Dec 2026	Johannesburg	2 days	R10,000
9 to 10 Dec 2026	Cape Town	2 days	R10,000
14 to 15 Dec 2026	Online	2 days	US\$900

Fees are per delegate. South African venues are priced in rand; other locations and live online in US dollars. Fees exclude 15% VAT where applicable. Group bookings of three or more delegates from the same organisation qualify for a reduced rate. This course is also available as in house training, delivered at your own site on dates that suit your operation.

To book or request a quotation

Email registration@bmctrainings.org, WhatsApp +27 68 540 3736 or call +27 12 012 6265. Full course details and the live calendar are at www.bmctrainings.org.