

## <u>COURSE OVERVIEW HE0295</u> Certified Radiation Safety Officer/Supervisor (RSO/RSS)

## Course Title

Certified Radiation Safety Officer/Supervisor (RSO/RSS)

#### **Course Date/Venue**

Session 1: April 27-May 01, 2025/Crowne Meeting Room, Crowne Plaza Al Khobar, KSA Session 2: August 03-07, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

(30 PDHs)

AWA



## Course Reference

HE0295

#### <u>Course Duration/Credits</u> Five days/3.0 CEUs/30 PDHs

## Course Description







This practical and highly-interactive course includes practical sessions and exercises where participants carryout surface contamination and dose rate measurements and surveys. Theory learnt in the class will be applied using our state-of-the-art equipment.

This course is designed to provide delegates with a detailed and up-to-date overview of radiation protection safety. It will help the participants to apply proper rules and regulations on radiation safety and describe the characteristics of ionizing radiation and radioactive decay mechanisms; identify the different types of radiation units & measurement terminology, biological effects of radiation exposure and use proper methods of minimizing radiation dose; use the radiation measurement techniques and illustrate the design and safety assessment of radiation protection in the industry.

The course will discuss the types of industrial radiation sources and safety equipment including personnel monitoring equipment, radiation detection equipment, x-ray machines, radiography cameras, associated equipment, transport containers, inspection, maintenance equipment, etc.

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Course participants will practice emergency planning procedures and perform personnel monitoring as well as contamination control and limits; recognize ALARA program on maintaining exposures and dose limitations; distinguish workers and management responsibilities on safety protection from hazards and apply the general rules of safe handling of radioactive sources; describe the operational and environmental monitoring protection from radiation and identify the responsibilities of the regulators and other agencies as well as the purchasing, receipt & disposal of radiation sources; practice safe transport of radioactive materials and apply the control and safety aspects of radiation protection program for transport; and follow safety procedures for radioactive waste management and demonstrate radiography emergency planning, incident response and mitigation.

## Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Get certified as a "Certified Radiation Safety Officer"
- Apply proper rules and regulations on radiation safety and describe the characteristics of ionizing radiation and radioactive decay mechanisms
- Identify the different types of radiation units and measurement terminology, biological effects of radiation exposure and use proper methods of minimizing radiation dose
- Employ proper radiation monitoring, surveys, dose limits and personal monitoring
- Discuss the types of industrial radiation sources and safety equipment including personnel monitoring equipment, radiation detection equipment, x-ray machines, radiography cameras, associated equipment, transport containers, inspection, maintenance equipment, etc
- Practice emergency planning procedures and perform personnel monitoring as well as contamination control including posting for radiation and radioactive materials
- Recognize ALARA program on maintaining exposures and dose limitations
- Distinguish workers and management responsibilities on safety protection from hazards and apply the general rules of safe handling of radioactive sources
- Illustrate the design and safety assessment of radiation protection in the industry
- Describe the operational and environmental monitoring protection from radiation and identify the responsibilities of the regulators and other agencies as well as the purchasing, receipt and disposal of radiation sources
- Practice safe transport of radioactive materials and apply the control and safety aspects of radiation protection program for transport
- Follow safety procedures for radioactive waste management and demonstrate radiography emergency planning, incident response and mitigation as well as recognize Abu Dhabi radiation protection law



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## Exclusive Smart Training Kit - H-STK<sup>®</sup>



Participants of this course will receive the exclusive "Haward Smart Training Kit" (H-STK<sup>®</sup>). The H-STK<sup>®</sup> consists of a comprehensive set of technical content which includes electronic version conveniently saved in a Tablet PC.

## Who Should Attend

This course provides an overview of all significant aspects and considerations of radiation safety for those who are willing to be a Radioactive Safety Officer/Supervisor (RSO/RSS) such as safety officers, supervisors, engineers, inspectors and other technical staff.

#### Course Fee

**US\$ 5,500** per Delegate + **VAT**. This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

#### **Accommodation**

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

#### Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.



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## Course Certificate(s)

Internationally recognized Competency Certificates and Plastic Wallet Card Certificates will be issued to participants who have successfully completed the course and passed the exam at the end of the course. Successful candidate will be certified as a "Certified Radiation Protection Officer". Certificates are valid for 5 years.

#### Recertification is FOC for a Lifetime.

## Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-







P.O. Box 26070

Abu Dhabi, UAE

CC2527

#### **Radiation Safety Officer**

**Certification Program** 

This program is designed to assist companies in identifying professionals who have satisfied the minimum competencies specified in HE295. Haward Technology does not warrant 10 Tel: +971 2 59 69 400 guarantee the performance of any professional Fax: +971 2 59 69 401 certified under this program



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Recognised Recognised



(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

H		Haward Techno Continuing Professional E	logy Middle East Development (HTME-CPI	) Pa	ge 1 of 1
	<u>CI</u>	EU Official Tran	script of Rec	ords	
TOR Issuand	ceDate:	25-Feb-20			
HTME No.		PAR182287			
Participant N	Name:	Amir Al Attas			
Program				No. of Contact	
Ref.	Program T	itle	Program Date	Hours	CEU's
			February 23 - 25, 2020	30	2.0
HE0581	Certified Rac (1)In-line with Federal Auth	diation Protection Officer (RPO) h the Requirements of the hority for Nuclear Regulation	,,	50	3.0
HE0581	Certified Rac (1)In-line with Federal Auth (FANR) (2)Accredited Radiation Pr	diation Protection Officer (RPO) h the Requirements of the nority for Nuclear Regulation d by the National Centre for ptotion (NCRP) K A CARE			3.0
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HE0581	Certified Rac (1)In-line with Federal Auth (FANR) (2)Accredited Radiation Pro	diation Protection Officer (RPO) In the Requirements of the nority for Nuclear Regulation d by the National Centre for otection (NCRP) - K.A.CARE as of TOR Issuance Date	by the International Association	TRUE COPY Maricel De Guzman Academic Directo	3.0 3.0
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## Certificate Accreditations

Certificates are accreditation by the following international accreditation organizations:

British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

# • The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.



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#### Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. Fred Louw, MSc, BSc, is Senior Radiation Specialist and HSE Consultant with over 20 years of extensive experience in Radiation Safety & Protection, Radiation Physics, Nuclear Medicine, Radiation Oncology, Radiotherapy, Digital Image Protection, Operational Radiation Protection, Radiological Safety, Nuclear Medicine, Diagnostic Radiology, HAZOP, SHEQ Management, Root Cause Analysis, Health Risk Assessment, Internal Emergency Planning, Emergency

Response. Incident Investigation, Nuclear Security & Emergency, Occupational Hygiene, Conventional Safety, OHSAS, Hazardous Chemical Substances, Quality Control & Assurance, OSH & COID Act, ISO 17025, ISO 90001, OSHAS 18001 and Radiation Protection Software such as IMBA, VARSKIN, RASCAL, etc. Further, he is also well-versed in Strategic Leadership Project Management, Accounting Management, Human Resource Skills. Management, Communications & IT Management, Conflict Management, Database Development & Administration, Internal Auditing, Communication/Presentation Skills, Budgeting & Negotiation Skills, Report Writing, Labour Law, Statistical Analysis and SQL & Programing Languages. He is currently the Section Manager & Chief Scientist (Radiation Protection Specialist) of NECSA wherein he manages the RP function by long term strategic leadership, and short term operational coordination and provide technical support as an RPS.

During Mr. Louw's career life, he held significant positions such as the **Radiation Protection Officer** (**RPO**), **Radiation Protection Controller**, **External Dosimetry Specialist**, **Medical Physicist & Lecturer** and **Team Leader** for international companies and agencies such as the **South African Bureau of Standards** (**SABS**) and **Department Medical Physics Universitas Hospital and UFS** just to name a few.

Mr. Louw has a Master's degree in Radiation Protection and a Bachelor's degree in Physics from the University of the Witwatersrand and University of the Free State Bloemfontein, respectively. Further, he is a Certified Instructor/Trainer, a Registered Medical Physicist at Health Professional Council of SA (HPCSA) and a Registered Professional Scientist of Radiation Protection for South African Council for Natural Scientists (SANASP). Moreover, he is an active Chairman/member of South African Association for Physicist in Medicine and Biology (SAAPMB), Southern African Radiation Protection Society (SARPS), Southern African Radiation Protection (SARPA), Health Physics Society of America, South African National INES Committee, National and IRPA Committee, Ministerial Appointed Task Team and National Committee Developing and Implementing National Source Register and National Dose Register and National Qualification of RPOs.



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## **Course Program**

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1	
0730 – 0800	Registration & Coffee
0800 - 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
0830 - 0930	<ul> <li>Characteristics of Ionizing Radiation</li> <li>Radiation: Is a Natural Phenomenon          <ul> <li>What is Radiation?</li> <li>Natural Radiation</li> <li>Natural Sources of Radiation</li> <li>Cosmic Radiation</li> <li>Terrestrial Radiation</li> <li>Natural Radiation</li> <li>Artificial Sources of Radiation</li> <li>Composition of Matter</li> <li>Periodic Table of the Elements</li> <li>Light Elements: Hydrogen</li> <li>Light Elements: Helium</li> <li>Elements</li> <li>Atomic Particles</li> </ul> </li> </ul>
0930 - 0945	Break
0945 – 1100	Characteristics of Ionizing Radiation (cont'd) Isotopes • Radioactive Decay • Half-life • Radioactive Decay Graph • Radioactive Decay – Half-lives • Characteristics X-Rays • Ionization • Ionizing Radiation • Alpha Particle Decay • Alpha Particles • Beta Particles • Neutrons • Properties of Radiation: Inverse Square Law • X-rays vs. Gamma Rays • Radiation Interactions: Summary • Penetrating Ability of Different Types of Radiation
1100 – 1215	Radiation Units & Measurement TerminologyRadiation Units • SI Units • Prefixes • Radiation Units: Activity • SpecificActivity • Radiation Units: Exposure • Absorbed Dose • Dose Equivalent •Recommended Quality Factors • Dose Equivalence • Other Dose Equivalents• Radiation Exposure vs. Radiation Dose • Example 1 • Summary
1215 - 1230	Break
1230 - 1330	<b>Biological Effects of Radiation Exposure</b> Recognizing the Hazards • Radium Dial Painters • Radium Tonics, Quack Cures, Etc. • The Problem with Radium! • Anklylosing Spondylitis Patients • Atomic Bomb Survivors • Hiroshima & Nagasaki • Effects of Ionizing Radiation Exposure • Isotopes Accumulate in Different Parts of the Body • Pregnancy Risk • How Radiation Can Harm a Cell • Indirect Action • Chain of Events from Indirect Action • Non-Stochastic Health Effects
1330 – 1420	<ul> <li>Biological Effects of Radiation Exposure (cont'd)</li> <li>Acute Radiation Syndrome  <ul> <li>Hemopoietic Syndrome</li> <li>Gastrointestinal Effects</li> </ul> </li> <li>Other Early Effects <ul> <li>Skin Exposure</li> <li>Angioplasty Exposure</li> <li>Cataracts</li> </ul> </li> <li>Stochastic (Late) Health Effects <ul> <li>Stochastic (Random) Effects</li> <li>Cancer</li> <li>The Dose Makes the Poison</li> <li>Risk in Perspective</li> <li>Biological Effects of Radiation – Summary</li> </ul> </li> </ul>
1420 - 1430	<b>Recap</b> Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day One



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Day	2
Day	~

	Radiation Monitoring
	Radiation Detection & Monitoring • Radiation Monitoring • Radiation
	Dosimetry • Survey Meters • Pocket Dosimeter • Film Badge •
	Thermoluminescent Badge (TLD) • Thermoluminescent Dosimeter • Optically
0730 – 0900	Stimulated Luminescent Dosimeter (OSLD) <ul> <li>Radiation Monitoring</li> </ul>
	Radiation Instrument Operating Regions • Geiger Muller Tube • Ionization
	Chamber • Scintillation Counter • Scintillation Detector • Photomultiplier
	Tube • Personnel Monitoring • Detection & Measurement • Selection of
	Survey Meter • Survey Meter Characteristics • Calibration of Survey Meters
0900 - 0915	Break
	Radiation Monitoring Surveys & Dose Limits
	Early Protection Recommendations
0915 - 1215	Standards • What is Covered by the Standards? • Abu Dhabi Radiation
0515 - 1215	Protection Law • Emergency Exposures • Chronic Exposures • Occupational
	Exposures • Emergency Exposure • Justification of Practices • Dose
	Limitation
1215 – 1230	Break
	Radiation Dose Limits & Personal Monitoring
	Radiation Protection Goals • Radiation Protection Objective • Dose Limits •
1230 - 1420	<i>Occupational Exposures</i> • <i>Planned Special Exposures</i> • <i>Radiation Detection &amp;</i>
1230 - 1420	Monitoring • Personnel Monitoring • What is a Personnel Monitoring
	<i>Program?</i> • <i>Record Keeping</i> • <i>Personnel Dose Records</i> • <i>Rules for Personnel</i>
	Dosimeters • Objectives of Personnel Monitoring
	Recap
1420 - 1430	Using this Course Overview, the Instructor(s) will Brief Participants about the
1420 - 1400	Topics that were Discussed Today and Advise Them of the Topics to be Discussed
	Tomorrow
1430	Lunch & End of Day Two

Day 3

	Industrial Radiation Sources
	Types of Radiation • Radon • NARM • Man-Made (Artificial) Radiation
	Sources • Consumer Products • Medical Sources • Industrial Products • X-
	ray Fluorescence (XRF) Equipment • Sealed Sources • Sealed Source Mfrg. •
0700 0000	Plated/Foil Sources • Ind. RAM: Self Luminous Devices • Instrument
0730 - 0900	Calibrators • Calibrators • Nuclear Gauges • Portable Moisture/Density
	Gauges • Portable M/D Gauges • Gauge Functions: Direct Transmission •
	Gauge Functions: Backscatter • About the Gauge • M/D Gauges: Asphalt
	Content • M/D Gauge Design • M/D Gauge Use • Fixed Nuclear Gauges •
	Fixed Nuclear Gauges – Design
0900 - 0915	Break
	Industrial Radiation Sources (cont'd)
	Fixed Nuclear Gauges – Configurations • Fixed Gauges – Applications • Fixed
	Gauges • Summary: Nuclear Gauges • Industrial RAM – Well Logging •
	Well Logging • Typical Well Logging Source • Radiographic Testing (RT) •
0015 1045	Radiography Process • X-Ray Radiography • X-ray Tube Schematics • Field
0913 - 1043	X-Ray Radiography Systems • Making a Radiograph • Radiography Process:
	Isotopes • Gamma Radiography • IR Radioisotopes • Radiography Work Sites
	• Field Radiography • Radiographic Exposure Devices • Radiography
	Cameras • Associated Equipment & Accessories • Radiography Accessories •
	Industrial Radiation Sources



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	Contamination Control
1045 - 1215	Contamination Control • Daily Monitoring • Survey Meters for Contamination
	• Monthly Surveys • Areas to Monitor • Monitoring Smears • Reporting •
	Surveying for Removable Contamination • Contamination • External
	Contamination • Internal Contamination • General Rules • Contamination
	Monitoring • Contamination Control • Contamination Prevention • Control
	of Material • Security • Material Identification • Labeling • Vusie
1215 - 1230	Break
1210 1200	Posting for Radiation & Radioactive Materials
1000 1400	Radiation Warning Symbols • Uncontrolled and Controlled Areas • Caution
1230 - 1420	Signs • Radiation Area Sign • More Caution Signs • Evolution of Radiation
	Warning Signs • Posting for Radiation & RAM
	Recap
1420 1430	Using this Course Overview, the Instructor(s) will Brief Participants about the
1420 - 1430	Topics that were Discussed Today and Advise Them of the Topics to be Discussed
	Tomorrow
1430	Lunch & End of Day Three

#### Day 4

0730 - 0900	ALARAALARA=Dose LimitationICRP RecommendationsUnjustified ExposuresDose LimitationsMain ALARA ExposuresTimeDistanceImplementing ALARA PrinciplesAlways Keep Radiation Doses As Low AsReasonably Achievable (ALARA)Internal Exposure ProtectionALARAQuestionsAlwaysAlways Keep Radiation Doses As Low As
0900 - 0915	Break
0915 – 1045	Worker & Management ResponsibilitiesManagement ResponsibilitiesResponsibilities of WorkersCo-operationTheOptimization PrincipleThe Optimization ProcedureAppropriate ProtectionMeasuresThe Safety AssessmentFeedback & EvaluationSummary ofWorker & Management RightsResponsibilitiesWorker & ManagementResponsibilitiesQuestionsSummary of
1045 – 1215	Design & Safety AssessmentProtection from HazardsProtection from Internal HazardsRadiationProtection PhilosophyRadiation Safety AssessmentProcedure for Field Work• Classification of AreasGeneral RulesSafe HandlingSafe Handling ofRadioactive Sources• Safe Handling of Unsealed Sources• Safe Handling of X-Ray Machines• General Rules: X-Ray Machines• X-Ray Equipment DesignLeak Tests• Radiation Checks• Calibrations/Leak Tests• MaintenanceDesign & Safety Assessment• Calibrations/Leak Tests• Maintenance
1215 - 1230	Break



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	Operational Radiation Protection
	Radiation Protection Program • Assignment of Responsibilities •
	Accountability of Sources • Controlled Areas • Supervised Areas • Local
	Rules, Supervision & Personal Protective Equipment (PPE) • PPE •
	Monitoring Program • Individual Monitoring • Workplace Monitoring •
1230 - 1330	Individual Dose Assessment • Use of Investigation Levels • Dose Records •
1230 - 1330	Training • Quality Assurance Program • Management Responsibility •
	Operational Staff Responsibility • Audits & Reviews • Emergency
	<i>Intervention</i> • <i>Categories of Workers</i> • <i>Medical Examination</i> • <i>Counseling</i> •
	Record Keeping • Personnel Dose Records • Personnel Monitoring •
	Detection & Measurement • Moonlighting • Operational Radiation Protection
	Questions
	Environmental Monitoring & Protection
	<i>Environmental Monitoring &amp; Protection</i> <i>Environmental Monitoring</i> • <i>Monitoring</i> • <i>Operator Responsibilities</i> •
	<i>Environmental Monitoring &amp; Protection</i> <i>Environmental Monitoring • Monitoring • Operator Responsibilities •</i> <i>Responsibilities of the Regulators • Responsibilities of Other Agencies •</i>
1330 - 1420	<i>Environmental Monitoring &amp; Protection</i> <i>Environmental Monitoring • Monitoring • Operator Responsibilities •</i> <i>Responsibilities of the Regulators • Responsibilities of Other Agencies •</i> <i>Contamination Pathways • Types of Radiation Monitoring • Source</i>
1330 - 1420	<i>Environmental Monitoring &amp; Protection</i> <i>Environmental Monitoring • Monitoring • Operator Responsibilities •</i> <i>Responsibilities of the Regulators • Responsibilities of Other Agencies •</i> <i>Contamination Pathways • Types of Radiation Monitoring • Source</i> <i>Monitoring • Individual Monitoring • Environmental Monitoring Programs</i>
1330 - 1420	<ul> <li>Environmental Monitoring &amp; Protection</li> <li>Environmental Monitoring          <ul> <li>Monitoring              <li>Monitoring              <li>Operator Responsibilities              </li> <li>Responsibilities of the Regulators              <ul> <li>Responsibilities of Other Agencies</li> </ul> </li> <li>Contamination Pathways              <ul> <li>Types of Radiation Monitoring                     <ul> <li>Source Monitoring                      <ul> <li>Individual Monitoring                     <ul> <li>Environmental Monitoring Programs</li> <li>Designing Environmental Monitoring Programs                      <ul> <li>Environmental Monitoring Programs</li> <li>Environmental Monitoring Programs</li> </ul> </li> </ul> </li> </ul></li></ul></li></ul></li></li></li></ul></li></ul>
1330 – 1420	<ul> <li>Environmental Monitoring &amp; Protection</li> <li>Environmental Monitoring          <ul> <li>Monitoring              <li>Monitoring              <li>Operator Responsibilities              </li> <li>Responsibilities of the Regulators              <ul></ul></li></li></li></ul></li></ul>
1330 – 1420	<ul> <li>Environmental Monitoring &amp; Protection</li> <li>Environmental Monitoring          <ul> <li>Monitoring              <li>Monitoring              <li>Operator Responsibilities              </li> <li>Responsibilities of the Regulators              <ul> <li>Responsibilities of Other Agencies                  </li> <li>Contamination Pathways                  <ul> <li>Types of Radiation Monitoring</li></ul></li></ul></li></li></li></ul></li></ul>
1330 - 1420 1420 - 1430	<ul> <li>Environmental Monitoring &amp; Protection</li> <li>Environmental Monitoring          <ul> <li>Monitoring              <li>Monitoring              <li>Operator Responsibilities              </li> <li>Responsibilities of the Regulators              <ul> <li>Responsibilities of Other Agencies                  </li> <li>Contamination Pathways                  <ul></ul></li></ul></li></li></li></ul></li></ul>
1330 - 1420 1420 - 1430	<ul> <li>Environmental Monitoring &amp; Protection</li> <li>Environmental Monitoring          <ul> <li>Monitoring              <li>Monitoring              <li>Operator Responsibilities              </li> <li>Responsibilities of the Regulators              <ul></ul></li></li></li></ul></li></ul>
1330 - 1420 1420 - 1430	<ul> <li>Environmental Monitoring &amp; Protection</li> <li>Environmental Monitoring          <ul> <li>Monitoring              <li>Monitoring              <li>Operator Responsibilities              </li> <li>Responsibilities of the Regulators              <li>Responsibilities of Other Agencies              </li> <li>Contamination Pathways              <li>Types of Radiation Monitoring              </li> <li>Source Monitoring              <li>Individual Monitoring              <li>Environmental Monitoring              </li> <li>Programs              </li> <li>Designing Environmental Monitoring Programs              </li> <li>Environmental Monitoring Programs              </li> </li></li></li></li></li></li></ul> </li> <li>Recap         <ul> <li>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow</li> </ul> </li> </ul>

#### Day 5

	Purchasing, Receipt & Disposal of Radiation Sources
	Purchasing • Basic Information • Radiation Worker • Radiation Protection
0730 - 0830	<i>Program</i> • Administrative Control Measures • Receipt of Radiation Sources •
	Receiving a New Source • Prior to Shipping • It Arrives! • Opening • If I
	were You I would • Disposal • Purchasing, Receipt & Disposal
	Transport of Radioactive Materials
	RAM Transportation • RAM Transportation Regulations • U.S. Department
	of Transportation (USDOT) • USDOT Regulations • U.S. Regulatory
	Agencies • U.S. Regulatory Agencies: USNRC • U.S Postal Service • Airline
	Organizations • International Civil Aviation Organization (ICAO) •
0830 0030	International Air Transport (IATA) • IATA • Regulations • Radiation
0830 - 0930	Protection Program for RAM Transport • Emergency Response • Design
	Approval • Training • Hazmat Employee Training • Definitions •
	Definitions (49 CFR) • Package Types • Excepted Packages • Industrial
	Packages • Industrial Package Types • IP-2 Container • Type A Packages •
	Type B Packages • Package Design & Tests – Type A & B • Content Limits –
	<i>Type A &amp; B • Content Limits for Packages</i>
0930 - 0945	Break



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	Transport of Radioactive Materials (cont a)
	<i>Type C Packages</i> • <i>Content Limits for Type C Packages</i> • <i>Packages for Fissile</i>
	<i>Material &amp; U Hexafluoride</i> • <i>Uranium Hexafluoride Shipment</i> • <i>Overpacks</i> •
	Marking, Labeling & Placarding • Radiation Warning Labels • Category I -
	White • Category II – Yellow • Category III - Yellow • Package Warning
0045 1045	Labels • Label Categories • Fissile • Cargo Only Label • Identification
0945 - 1045	Labels • More Labels • Questionable Labels • Placards • Placarding
	Transport Vehicles • Placarding Freight Containers • Shipping Papers •
	Sample Air Shipping Paper • Consignors Declaration • Notification of
	Competent Authorities • Segregation in Transit & Storage • Blocking &
	Bracing Packages • RAM Shipping Areas • Anti-Radwaste Transport
	Protestors
	Radioactive Waste Management
	Radioactive Waste – Definition • Objective of Radwaste Management •
	Radwaste Management Principles • Radwaste–Forms • Radwaste – Physical
1045 - 1115	Forms • Mixed Waste • Mixed Waste: A Case History • Radwaste –
	Classification • Low-Level Radioactive Vvaste • Radwaste Management – Basic
	Steps • Raawaste Disposal Options • Raawaste Management: Methoas •
	Management
	Radiological Emergency Planning & Response
	Radiation Emergency • Sources of Radiation Emergencies • Type of
	Radiological Emergencies • So what's the Purpose of an Emergency Plan? •
	Emergency Planning & Preparedness • Emergency Plan • Emergency
1115 – 1200	Equipment • Emergency Procedure • Response Action • Accidents Involving
	Contamination • Accidents Involving External Exposure • Accidents
	Involving Fire • Case History: FedEx Plane Crash • Personnel
	Decontamination • Radiological Emergency Information • Contamination
	<i>Treatments</i> • <i>Radiation Emergency Planning &amp; Response Questions</i>
1200 - 1215	Break
1200 – 1215	Break Abu Dhabi Radiation Protection Law
1200 - 1215	Break Abu Dhabi Radiation Protection Law Legal Background • International Commission on Radiological Protection (CRR) • LAFA Background etiene • Alw Dhabi Badiological Protection
1200 - 1215	Break Abu Dhabi Radiation Protection Law Legal Background • International Commission on Radiological Protection (ICRP) • IAEA Recommendations • Abu Dhabi Radiological Protection Law • IK legal we Abu Dhabi Legislation • Articles 7 • Articles 8 11 Optimisation
1200 - 1215	Break Abu Dhabi Radiation Protection Law Legal Background • International Commission on Radiological Protection (ICRP) • IAEA Recommendations • Abu Dhabi Radiological Protection Law • UK legal vs Abu Dhabi Legislation • Article 7 • Articles 8-11 Optimisation and Doce Limite • Article 12 14 Management Responsibilities • Article 15
1200 - 1215	Break Abu Dhabi Radiation Protection Law Legal Background • International Commission on Radiological Protection (ICRP) • IAEA Recommendations • Abu Dhabi Radiological Protection Law • UK legal vs Abu Dhabi Legislation • Article 7 • Articles 8-11 Optimisation and Dose Limits • Article 12-14 Management Responsibilities • Article 15 Presention of Accidents • Article 16 Emergency Plan • Article 17 Operating
1200 - 1215	Break Abu Dhabi Radiation Protection Law Legal Background • International Commission on Radiological Protection (ICRP) • IAEA Recommendations • Abu Dhabi Radiological Protection Law • UK legal vs Abu Dhabi Legislation • Article 7 • Articles 8-11 Optimisation and Dose Limits • Article 12-14 Management Responsibilities • Article 15 Prevention of Accidents • Article 16 Emergency Plan • Article 17 Operating Experience • Article 18 Safety of Generators • Article 20 Optimisation
1200 - 1215 1215 - 1300	Break Abu Dhabi Radiation Protection Law Legal Background • International Commission on Radiological Protection (ICRP) • IAEA Recommendations • Abu Dhabi Radiological Protection Law • UK legal vs Abu Dhabi Legislation • Article 7 • Articles 8-11 Optimisation and Dose Limits • Article 12-14 Management Responsibilities • Article 15 Prevention of Accidents • Article 16 Emergency Plan • Article 17 Operating Experience • Article 18 Safety of Generators • Article 20 Optimisation • Article 21 Controlled and Supervised Areas • Article 22 Local Rules and PPE •
1200 - 1215 1215 - 1300	Break Abu Dhabi Radiation Protection Law Legal Background • International Commission on Radiological Protection (ICRP) • IAEA Recommendations • Abu Dhabi Radiological Protection Law • UK legal vs Abu Dhabi Legislation • Article 7 • Articles 8-11 Optimisation and Dose Limits • Article 12-14 Management Responsibilities • Article 15 Prevention of Accidents • Article 16 Emergency Plan • Article 17 Operating Experience • Article 18 Safety of Generators • Article 20 Optimisation • Article 21 Controlled and Supervised Areas • Article 22 Local Rules and PPE • Article 23 Workplace Monitoring • Article 24 Personnel Monitoring • Article
1200 - 1215 1215 - 1300	Break         Abu Dhabi Radiation Protection Law         Legal Background       International Commission on Radiological Protection         (ICRP)       IAEA Recommendations       Abu Dhabi Radiological Protection Law         UK legal vs Abu Dhabi Legislation       Article 7       Articles 8-11 Optimisation         and Dose Limits       Article 12-14 Management Responsibilities       Article 15         Prevention of Accidents       Article 16 Emergency Plan       Article 17 Operating         Experience       Article 18 Safety of Generators       Article 20 Optimisation         Article 21 Controlled and Supervised Areas       Article 22 Local Rules and PPE         Article 23 Workplace Monitoring       Article 24 Personnel Monitoring       Article         25/26 Monitoring of Compliance       Article 27/28 Information. Training &
1200 - 1215 1215 - 1300	Break         Abu Dhabi Radiation Protection Law         Legal Background       International Commission on Radiological Protection         (ICRP)       IAEA Recommendations       Abu Dhabi Radiological Protection Law         UK legal vs Abu Dhabi Legislation       Article 7       Articles 8-11 Optimisation         and Dose Limits       Article 12-14 Management Responsibilities       Article 15         Prevention of Accidents       Article 16 Emergency Plan       Article 17 Operating         Experience       Article 18 Safety of Generators       Article 20 Optimisation         Article 21 Controlled and Supervised Areas       Article 22 Local Rules and PPE         Article 23 Workplace Monitoring       Article 24 Personnel Monitoring       Article         25/26 Monitoring of Compliance       Article 27/28 Information, Training & Special Requirements       Article 29 Public Exposure       Article 30 Radioactive
1200 - 1215 1215 - 1300	BreakAbu Dhabi Radiation Protection LawLegal BackgroundInternational Commission on Radiological Protection(ICRP)IAEA RecommendationsAbu Dhabi Radiological Protection LawUK legal vs Abu Dhabi LegislationArticle 7Articles 8-11 Optimisationand Dose LimitsArticle 12-14 Management ResponsibilitiesArticle 15Prevention of AccidentsArticle 16 Emergency PlanArticle 17 OperatingExperienceArticle 18 Safety of GeneratorsArticle 20 OptimisationArticle 21 Controlled and Supervised AreasArticle 22 Local Rules and PPEArticle 23 Workplace MonitoringArticle 24 Personnel MonitoringArticle25/26 Monitoring of ComplianceArticle 27/28 Information, Training & Special RequirementsArticle 29 Public ExposureArticle 30 Radioactive WasteWasteArticle 31 Monitoring of Public ExposureArticle 32 Medical
1200 - 1215 1215 - 1300	BreakAbu Dhabi Radiation Protection LawLegal BackgroundInternational Commission on Radiological Protection(ICRP)IAEA RecommendationsAbu Dhabi Radiological Protection LawUK legal vs Abu Dhabi LegislationArticle 7Articles 8-11 Optimisationand Dose LimitsArticle 12-14 Management ResponsibilitiesArticle 15Prevention of AccidentsArticle 16 Emergency PlanArticle 17 OperatingExperienceArticle 18 Safety of GeneratorsArticle 20 OptimisationArticle 21 Controlled and Supervised AreasArticle 22 Local Rules and PPEArticle 23 Workplace MonitoringArticle 24 Personnel MonitoringArticle25/26 Monitoring of ComplianceArticle 27/28 Information, Training & Special RequirementsArticle 29 Public ExposureArticle 30 RadioactiveWasteArticle 31 Monitoring of Public ExposureArticle 32 MedicalExposureArticle 32 Medical
1200 - 1215 1215 - 1300	Break         Abu Dhabi Radiation Protection Law         Legal Background       International Commission on Radiological Protection         (ICRP)       IAEA Recommendations       Abu Dhabi Radiological Protection Law         UK legal vs Abu Dhabi Legislation       Article 7       Articles 8-11 Optimisation         and Dose Limits       Article 12-14 Management Responsibilities       Article 15         Prevention of Accidents       Article 16 Emergency Plan       Article 17 Operating         Experience       Article 18 Safety of Generators       Article 20 Optimisation         Article 21 Controlled and Supervised Areas       Article 22 Local Rules and PPE         Article 23 Workplace Monitoring       Article 27/28 Information, Training &         Special Requirements       Article 29 Public Exposure       Article 30 Radioactive         Waste       Article 31 Monitoring of Public Exposure       Article 32 Medical         Exposure       Article 39 Protection of Women
1200 - 1215 1215 - 1300 1300 - 1315	Break         Abu Dhabi Radiation Protection Law         Legal Background       International Commission on Radiological Protection         (ICRP)       IAEA Recommendations       Abu Dhabi Radiological Protection Law         UK legal vs Abu Dhabi Legislation       Article 7       Articles 8-11 Optimisation         and Dose Limits       Article 12-14 Management Responsibilities       Article 15         Prevention of Accidents       Article 16 Emergency Plan       Article 17 Operating         Experience       Article 18 Safety of Generators       Article 20 Optimisation         Article 21 Controlled and Supervised Areas       Article 22 Local Rules and PPE         Article 23 Workplace Monitoring       Article 27/28 Information, Training &         Special Requirements       Article 29 Public Exposure       Article 30 Radioactive         Waste       Article 31 Monitoring of Public Exposure       Article 32 Medical         Exposure       Article 39 Protection of Women         Course Conclusion       Using this Course Overview, the Instructor(s) will Brief Participants about the
1200 - 1215 1215 - 1300 1300 - 1315	Break         Abu Dhabi Radiation Protection Law         Legal Background       International Commission on Radiological Protection         (ICRP)       IAEA Recommendations       Abu Dhabi Radiological Protection Law         UK legal vs Abu Dhabi Legislation       Article 7       Articles 8-11 Optimisation         and Dose Limits       Article 12-14 Management Responsibilities       Article 15         Prevention of Accidents       Article 16 Emergency Plan       Article 17 Operating         Experience       Article 18 Safety of Generators       Article 20 Optimisation         Article 21 Controlled and Supervised Areas       Article 22 Local Rules and PPE         Article 23 Workplace Monitoring       Article 27/28 Information, Training &         Special Requirements       Article 29 Public Exposure       Article 30 Radioactive         Waste       Article 31 Monitoring of Public Exposure       Article 32 Medical         Exposure       Article 39 Protection of Women         Course Conclusion       Using this Course Overview, the Instructor(s) will Brief Participants about the         Course Topics that were Covered During the Course       Course
1200 - 1215 1215 - 1300 1300 - 1315 1315 - 1415	Break         Abu Dhabi Radiation Protection Law         Legal Background       International Commission on Radiological Protection         (ICRP)       IAEA Recommendations       Abu Dhabi Radiological Protection Law         UK legal vs Abu Dhabi Legislation       Article 7       Articles 8-11 Optimisation         and Dose Limits       Article 12-14 Management Responsibilities       Article 15         Prevention of Accidents       Article 16 Emergency Plan       Article 17 Operating         Experience       Article 18 Safety of Generators       Article 20 Optimisation         Article 21 Controlled and Supervised Areas       Article 22 Local Rules and PPE         Article 23 Workplace Monitoring       Article 24 Personnel Monitoring       Article         25/26 Monitoring of Compliance       Article 27/28 Information, Training &       Special Requirements       Article 29 Public Exposure       Article 30 Radioactive         Waste       Article 31 Monitoring of Public Exposure       Article 32 Medical       Exposure       Article 32 Medical         Exposure       Article 39 Protection of Women       Course Conclusion       Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course         COMPETENCY EXAM       During the Course       Course Topics that were Covered During the Course
1200 - 1215 1215 - 1300 1300 - 1315 1315 - 1415 1415 - 1430	Break         Abu Dhabi Radiation Protection Law         Legal Background       International Commission on Radiological Protection         (ICRP)       IAEA Recommendations       Abu Dhabi Radiological Protection Law         UK legal vs Abu Dhabi Legislation       Article 7       Articles 8-11 Optimisation         and Dose Limits       Article 12-14 Management Responsibilities       Article 15         Prevention of Accidents       Article 16 Emergency Plan       Article 17 Operating         Experience       Article 18 Safety of Generators       Article 20 Optimisation         Article 21 Controlled and Supervised Areas       Article 22 Local Rules and PPE         Article 23 Workplace Monitoring       Article 24 Personnel Monitoring       Article         25/26 Monitoring of Compliance       Article 27/28 Information, Training &       Special Requirements       Article 29 Public Exposure       Article 30 Radioactive         Waste       Article 31 Monitoring of Public Exposure       Article 32 Medical       Exposure       Article 39 Protection of Women         Course Conclusion       Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course       COMPETENCY EXAM         Presentation of Course Certificates       Lowed Course       Lowed Course       Lowed Course



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## Instruments (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art instrument "RadEye B20-ER" model.



#### Book(s)

As part of the course kit, the following e-book will be given to all participants:



## Course Coordinator

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