Course Outline....

Basic Mathematics Review
• Fundamental Concepts
• Unit Conversions

Physical Principles of Radiation & Radioactivity
• Atomic & Nuclear Structure
• Radioactivity & Decay

Interaction of Radiation with Matter
• Charged Particle Interactions
• Photon Interactions
• Neutron Interactions

Biological Effects of Radiation
• Effects on Water
• Effects on Living Cells
• Effects on Human Organ Systems
• Whole-Body Effects in Humans

Radiation Dosimetry
• Quantities & Units
• Dose Calculations

Radiation Sources
• Natural Sources
• Man-made Radiation Sources

Radiation Detection & Measurement
• Principles of Detection
• Gas-Filled Detectors
• Liquid Scintillation Detectors
• Solid State Detectors
• Instrument Calibration

External Dosimetry
• Ideal Personnel Monitor Characteristics
• Photographic Badges
• Thermoluminescent Dosimetry (TLD)
• Hybrid Badges
• Performance Testing of Badge Systems
• Criticility Badges
• Special Badges

Internal Dosimetry
• Bioassay
• In-Vivo Counting
• Dosimetric Calculations

Environmental Monitoring
• Monitoring Programs
• Monitoring Equipment
• Counting Statistics

Radiological Protection & Control
• ALARA Concept
• Exposure Control Techniques
• Shielding Design
• Case Studies: Shielding Applications
• Class Exercise: Shielding Design
• Transporting Radioactive Packages
• Respiratory Protection
• Contamination Control

Health Physics Surveys
• Field Monitoring
• Monitoring Techniques

Radioactive Waste
• Bases for Standards
• NRC

Radiation Accident Safety
• Classification
• Accident Phases
• Emergency Planning & Response
• Documentation
• Case Studies: Accidents
• Public Relations

Standards & Regulations
• Regulatory/Advisory Bodies
• Types of Standards
• Bases for Standards
• NRC Regulations & Regulatory Guides

Legal Aspects of Radiation Safety
• Radiation Litigation
• Probability of Causation Concept
• Records
• Professional Competence

Oversight of Radiation Safety Programs
• Elements of Effective HP Programs
• Signals that a Program Appraisal is Needed
• Unique Characteristics of Radiation Safety Programs
• Guidance on Organizing & Conducting Appraisals
• Effects

Course Description....

This course is designed to provide RSO’s and assistant RSO’s the technical and practical training necessary for establishing and implementing a technically sound and cost-effective radiation safety program at a licensed facility. The course includes a review of basic mathematics, radiation and radioactivity, and operational health physics and provides additional practical guidance and case studies of applied radiation safety programs. In addition, it examines all applicable regulations for NRC and Agreement States and provides suggestions for monitoring and improving program performance.
DR. RODICAN P. REED has over 30 years of experience in health physics. From 1992 to 2007, he was a Senior Health Physicist at the U.S. Nuclear Regulatory Commission (NRC) Technical Training Center. At NRC, he provided health physics training to NRC inspectors, Agreement State inspectors, and other Federal agencies. He was responsible for the uranium fuel cycle technology training curriculum, including uranium mining and milling, health physics, nuclear criticality safety, fire protection, integrated safety analyses (ISA's), and uranium enrichment technologies. He trained fuel facility inspectors and license reviewers as part of the inspector qualification program. He briefed NRC Commissioners, the Office of the Inspector General (OIG), the Atomic Safety and Licensing Board Panel (ASLBP), and the news media, in radiation protection and uranium fuel cycle technology. He developed post-graduate training in radiation protection for the International Atomic Energy Agency (IAEA), which is now in use world-wide. He trained NRC and Agreement State health physics inspectors in the new 10 CFR Part 20. He developed and presented training on health physics for the proposed high-level waste geologic repository at Yucca Mountain.

He is certified by the American Board of Health Physics (ABHP) and is a member of the American Academy of Health Physics (AAHP). Most recently, he was a member of the History Committee of the Health Physics Society (HPS). He is also a past member of the HPS Continuing Education Committee and the Professional Development Committee of the AAHP. He has published papers in health physics, made numerous technical presentations, and prepared input to environmental impact statements (EIS's) for TVA's nuclear power plants and proposed coal gasification facility. He has a B.S. in Physics (1971), M.S. in Nuclear Engineering (1973), and Ph. D. in Health Physics (1977), all from Georgia Tech.

Who should attend ...

This course has been developed for those who need to be accepted by NRC or Agreement States as a Radiation Safety Officer for licensing purposes. It is geared to those with minimum technical background or those needing a working knowledge of compliance with NRC or Agreement State regulations.

Accommodations

This course will be held at the Boston Newton Marriott. A block of rooms has been reserved at reduced rates for course participants. Please make your reservation directly with the hotel by calling 617-969-1000. Please specify that you are attending Technical Management Services’ short course to receive the group rate.

The reserved block of rooms will be released 3 weeks prior to the course (at which time rooms will be offered on an availability basis only).

4 Easy Ways To Register....

1. Register online: www.tmscourses.com
2. Call TMS at (860) 738-2440
3. Fax your registration (860) 738-9322
4. Mail the attached form: TMS, P.O. Box 226, New Hartford, CT 06057

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