A 5-Day Short Course

Technical Management Services, Inc.

Fundamentals of Radiation Safety

May 16-20, 2022 ◆ Live “Online” Instruction

Course Description....

This course is designed as an introduction to basic radiation protection principles for beginning HP Technicians and for those with a minimum of technical training. Theory and practical application are equally covered with each student receiving a hard bound textbook and a complete course notebook for future reference and further depth of study. Topics include Basic Physics and Radiological Units, Atomic and Nuclear Structure, Radioactivity, Decay Schemes, Quantities and Units, Statistics Lab and Demonstration, X-rays, Time, Distance and Shielding, Interaction of Radiation with Matter, Internal Dosimetry and Maximum Permissible Concentrations, Natural Radiation, External Dosimetry, Record Keeping, Radiation Detectors (Ionization Chambers, Proportional Counters, Geiger Counters, Scintillation Detectors, Neutron Detectors, etc.), and The Biological Effects of Radiation.

Who Should Attend

Current or prospective Radiation Safety/Health Physics Technicians in nuclear facilities who need an introduction to, or a review of, basic radiation safety principles and methods.

Course Outline....

PHYSICAL PRINCIPLES OF RADIATION & RADIOACTIVITY
- Atomic & Nuclear Structure
- Radioactivity & Decay

INTERACTION OF RADIATION WITH MATTER
- Beta Rays
- Alpha Rays
- Gamma Rays
- Neutrons

RADIATION DOSIMETRY
- Units
- External Dosimetry
- Internal Dosimetry
- Limits

BIOLOGICAL EFFECTS OF RADIATION
- Dose Responses: Direct & Indirect Action
- Acute Radiation Effects
- Delayed Radiation Effects
- Biological Effectiveness of Radiation

RADIATION LIMITS
- Regulatory/Advisory Bodies
- External Limits
- Internal Limits
- Special Limits

RADIATION DETECTION & MEASUREMENT
- Alpha/Beta Particle Survey Instruments
- Gamma Radiation Survey Instruments
- Neutron Survey Instruments
- Personnel Dosimetry
- Instrument Calibration

BASIC MATHEMATICS REVIEW
- Practical Problem Calculations
- Unit Conversions

RADIATION SHIELDING
- Design & Use of Radiation Shields
- Classroom Exercise: Shield Design
- Dose Minimization (ALARA Concept)

RADIOACTIVE CONTAMINATION
- Contamination Control Program Elements
- Effective Contamination Surveys
- Selection, Use & Cleaning of Protective Clothing
- Design & Use of Containments

AIR SAMPLING & RESPIRATORY PROTECTION
- Purpose of Air Sampling
- Representative Air Sampling
- Air Sampling Methods
- Types & Uses of Respirators

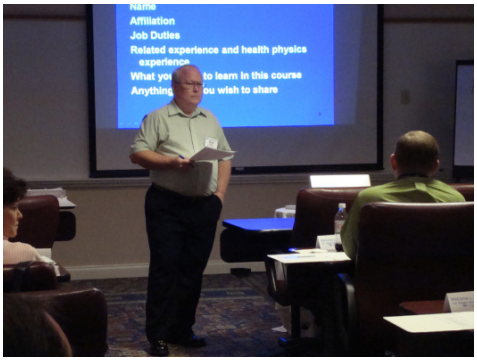
RADIOACTIVE WASTE
- Types & Sources
- Handling & Treatment of Wastes
- Waste Disposal

LEGAL ASPECTS OF RADIATION SAFETY
- Records
- Radiation Litigation Cases
- Probability of Causation Concept

RESPONSE TO RADIATION SAFETY INCIDENTS
- Initial Response
- Follow_up Response
- Long_Term Corrective Actions
- Documentation

OVERSIGHT OF NUCLEAR FACILITY HP PROGRAMS
- Nuclear Power Reactors
- Hospitals/Clinics
- Uranium Production/Enrichment/ Research
- Accelerators
- Radiography Units

Course Instructor



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.

PRACTICAL TRAINING THAT WILL HELP YOU:

- Understand and apply the basic principles of Radiation Safety.
- Perform essential calculations for dose control, shielding, and radioactivity concentrations in air, water, and contamination survey samples.
- Stay in compliance with all Federal and State radiation safety regulations while minimizing compliance costs.
- Minimize radiation doses to workers at your facility through the correct application of ALARA principles.
- Maintain a complete and accurate record keeping system designed to satisfy inspectors and regulatory agencies.
- Satisfy formal training requirements of NRC and State regulations.

HOW TO REGISTER ...

Visit our website at www.tmscourses.com and register online, or call 860-738-2440

Registration questions can be emailed to info@tmscourses.com

Course fee: $1295 Discounts: $50 for two or more from same company