

Health Physics For Uranium Users



COURSE DESCRIPTION

This 5-day course will enable participants to develop and implement comprehensive health physics programs for facilities and operations processing or handling uranium materials. The radiological and chemical properties of uranium, chemical and radiological toxicity, and potential impacts of recycled uranium impurities will be covered. The radiation protection concerns and exposure control methods associated with various types of uranium processing and handling operations will be presented with emphasis on methods for effective contamination control. Additional topics to be addressed include: workplace monitoring program design & implementation, including instrumentation considerations; surface and personnel contamination monitoring and air sampling; design and implementation of personnel bioassay programs, including determination of sampling frequency and action levels; basics of nuclear criticality safety; and cost effective compliance with new ALARA and record keeping requirements.

This course will help you

- Understand the unique health physics concerns of working with uranium materials
- Develop improved personnel monitoring and air sampling programs
- Comply with the New 10CFR20 regulations affecting uranium facilities, including new written ALARA requirements
- Develop a more effective contamination control program aimed at lowering total facility radiation doses
- Evaluate the capabilities and limitations of various types of health physics instrumentation used in detecting uranium materials
- Understand the basic of nuclear criticality safety, alarm systems, and emergency procedures

TOPICS

Properties of Uranium

- Uranium Decay Chain
- Radiological Properties of Uranium Isotopes
- Chemical Compounds & Reactions
- Physical Properties of Uranium and its Compounds

Relative Hazards

- Chemical Toxicity
- Radiological Toxicity
- Physical Hazards
- Relative Hazard Assessment

Uranium Processing Experience

- Types of Uranium Processes and Operations
- Radiological and Other Hazards
- Impact of Recycled Uranium Impurities
- Exposure Experience and Controls

Contamination Control and Monitoring

- Methods of Contamination Control in Processing
- Methods of Contamination Control in Maintenance Activity
- Ventilation of Equipment and Work Areas
 - General design objectives
 - Performance testing: flow rate, isokinetic sampling, frequency determination
- Workplace and Personnel Sampling
 - uranium detection instrumentation
 - surface contamination monitoring program
 - personnel contamination monitoring program
 - air Sampling Program
 - strategy and Objectives
 - plant area sampling
 - breathing zone and personal air sampling
 - Air sample results and bioassay - correlation

Personnel Exposure Control and Monitoring

- Internal Dose Control and Monitoring
 - Urinalysis program – strategy and methods
 - In-vivo program - strategy and methods
 - Dose-assessment basics and control strategy
- External Dose Control and Monitoring
 - Deep dose monitoring program - strategy and methods
 - Shallow dose monitoring program - strategy and methods

Decontamination Techniques and Criteria

- Wet Decontamination Methods
- Dry Decontamination Methods
- High-Tech Decontamination Methods - (Lasers)
- Release Criteria

Nuclear Criticality Safety - Overview

- Sources of NCS Assistance and Information
- Basis Principles of NCS as Applied to Uranium
- Criticality Alarm System Fundamentals
- Emergency Procedures

New ALARA Requirements (10CFR20 and DOE RADCON Manual)

- Written ALARA Programs
- Operating Procedures
- Health Physics Procedures
- Dose Minimization and Tracking
- Trend Analysis and Feedback

Record Keeping Requirements - A Review

CONTINUING EDUCATION CREDITS



The American Academy of Health Physics (AAHP) awarded this course 32 continuing education credits.
Assigned ID Number: 2011-00-008.

For further information or assistance, please contact:

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