

**SHAWNEE ENVIRONMENTAL
SERVICES, INC**

RADIATION CONTROL TECHNICIAN

TRAINING PROGRAM

CLASS CURRICULUM

RCTs are required to be trained to the level of knowledge and skills necessary for conducting their assigned tasks. Qualifying the technician for handling any situation that may arise may require a more extensive level of training. The initial training program ensures that RCTs are trained to meet performance requirements using a systematic approach to training. The amount of classroom instruction may vary depending on the initial knowledge and skill level of the trainee. Initial qualification is typically broken down into two phases.

Phase I: Academic Training

Phase I consists of a standard foundation of academic training, which encompasses specific learning objectives divided into two sections: Core Academics and Site Academics. Phase I lessons may be completed in any order, provided that prerequisite lessons (if applicable) are completed first. The Core Academics section consists of the following 13 lessons:

- Basic Mathematics and Algebra (1.01)
- Unit Analysis and Conversions (1.02)
- Physical Sciences (1.03)
- Nuclear Physics (1.04)
- Sources of Radiation (1.05)
- Radioactivity and Radioactive Decay (1.06)
- Interaction of Radiation with Matter (1.07)
- Biological Effects of Radiation (1.08)
- Radiological Protection Standards (1.09)
- As Low As Reasonably Achievable (ALARA) (1.10)
- External Exposure Control (1.11)
- Internal Exposure Control (1.12)
- Radiation Detector Theory (1.13)

The Site Academics section includes the following 19 lessons:

- Radiological Documentation (2.01)
- Communication Systems (2.02)
- Counting Errors and Statistics (2.03)
- Dosimetry (2.04)
- Contamination Control (2.05)
- Airborne Sampling Program/Methods (2.06)
- Respiratory Protection (2.07)
- Radiological Source Control (2.08)
- Environmental Monitoring (2.09)
- Access Control and Work Area Setup (2.10)
- Radiological Work Coverage (2.11)
- Shipment and Receipt of Radioactive Material (2.12)
- Radiological Incidents and Emergencies (2.13)
- Personnel Decontamination (2.14)
- Radiological Considerations for First Aid (2.15)
- Radiation Survey Instrumentation (2.16)
- Contamination Monitoring Instrumentation (2.17)
- Air Sampling Equipment (2.18)
- Counting Room Equipment (2.19)

RCT trainees shall be required to successfully complete examinations on the materials covered in each of the Core and Site Academic lessons. The minimum passing score for each examination shall be 80 percent. RCT trainees scoring 70–79 percent shall have the option of taking a second examination for the same lesson within 5 working days of the first examination or repeating the entire lesson with a subsequent exam. RCT trainees choosing to take a second examination must attain a minimum score of 80 percent or must repeat the entire lesson with the subsequent exam. RCT trainees scoring less than 70 percent on an examination shall retake the appropriate lesson with the subsequent exam, which shall be administered by way of classroom-based training. In all cases, the third and final attempt on any particular lesson shall be administered by way of classroom-based training.

Phase II: JOB PERFORMANCE MEASURES (JPMS)

Phase II training consists of applied, on-the-job training that provides the RCT trainee with adequate job-performance skills. The objectives of the academic training in Phase I provide the basis for the skills and tasks to be performed in Phase II training, which uses a mixture of classroom and applied (hands-on) training. RCT trainees are taught to apply academic knowledge to specific tasks. Phase II consists of two parts: training and evaluation.

The training portion consists of instruction and on-the-job training conducted by the RCT trainer/instructor or designee, who should demonstrate the task to the RCT trainee and emphasize the critical elements of the task. The instructor should explain the importance of the task and the adverse effects if the task is not performed properly. RCT training may be given at any time or in any order, provided the prerequisite learning objectives from Phase I of the task have been taught, and the proficiency of the RCT trainee on those objectives has been documented.

Upon direction from the Health Physics Training Specialists, the basic task list for the applied phase training may include the following tasks:

- Radiological Instrumentation
 - After-calibration and daily source response of various radiation and contamination instruments
 - Chi square and efficiency determinations for counting room equipment
- Radiological Protection
 - Performing a contamination survey
 - Performing a radiation survey
 - Obtaining air samples
 - Performing a leak test on a radioactive source

Depending on job requirements and needs, other tasks may be necessary. When the actual task cannot be performed but is simulated, the conditions of the task performance, references, tools, and equipment should reflect the actual task to the fullest extent possible. RCT trainees should be given sufficient practice in performing the task before an evaluation is conducted. Once the RCT trainees have demonstrated the ability to perform a task, the trainees shall be evaluated using job performance measures that evaluate the knowledge and skills needed to accomplish the task. RCT trainees shall be evaluated on a satisfactory/unsatisfactory basis for each task. Once a trainee demonstrates task qualification and has obtained the required signatures, he or she may perform the task without direct supervision. Any applied training completed with less than 100 percent proficiency on critical steps shall constitute a failure. Failure of any tasks shall require remedial action, which may include a repeat demonstration of the task by the trainer/evaluator or allowing the RCT trainee to perform the task with direct supervision.