

APPENDIX E

LEAK TEST OF SEALED RADIOACTIVE SOURCES

Each sealed radioactive source and each exposure or storage device using depleted uranium shielding must be tested at regular intervals to ensure that the radioactive material is secure and is not leaking contamination. Leak test requirements are specified in the Rules and Regulation for Control of Sources of Ionizing Radiation, Paragraph RH-1212 and Paragraph RH-8403.

Leak tests may be performed by the Licensee or by a Service Vendor who is licensed by the Department or an Agreement State or the NRC to perform leak tests as a service to radioactive material licensees. The Licensee must develop and use Leak Test Procedures which describe how the test will be performed, analyzed, and evaluated by one of the following methods:

- Leak tests performed by the Licensee using “in-house” test materials, radiological counting instrumentation, and data evaluation recording, or,
- Leak tests performed by the Licensee using vendor-supplied leak test kits with analytical and data evaluation services performed by an approved vendor, or,
- Service Vendor performs all leak tests, analysis, and evaluation.

Leak test procedures must be submitted to the Department as part of the license application and must be approved by the Department prior to performing the tests. Information that is required to be included in the procedures is dependent upon how the Licensee intends to perform the test.

Complete Form E (attached to this Appendix) describing the manner in which the required leak test will be performed and submit the Form with the Application. Specific Leak Test procedures must be included in Item 22 “Operating Procedures” of this Application.

Key Points That Must Be Considered for the Leak Test Procedures

A. Leak Test Frequency.

Sealed sources shall be leak tested at least every 6 months, unless otherwise specified in the Radioactive Material License. Exposure or storage devices using depleted uranium shielding shall be tested for leakage at intervals not to exceed 12 months.

B. Leak Test Kit

Only leak test kits provided by licensed vendors may be used to sample (smear) sealed sources and depleted uranium shielding.

C. Taking the Leak Test Sample

Leak test samples shall be taken only by the Radiation Safety Officer, or authorized designee, wearing their assigned personnel monitoring dosimeters. Leak test samples shall be taken in accordance with the written instructions provided by the supplier of the leak test kit and the sealed source or exposure device manufacturer.

D. Leak Test Sample Analysis

Leak Test kit sample analysis will be performed only by vendors specifically licensed by the Department, the NRC, or other Agreement State to provide the service.

E. Leak Test Records

If a test indicates a sealed source is leaking, the source and exposure device will be removed from service and the Department will be notified by a written report on the leaking source within 5 days. The report will be submitted to Arkansas Department of Health and Human Services, P.O. Box 1437, Slot H-30, Little Rock, Arkansas, 72203-1437. The report will describe the equipment involved, the test results, and the corrective actions taken (i.e., device removed from service until repaired; radiation surveys conducted to determine presence of contamination; decontamination as necessary).

Leak test records shall be maintained on file for inspection purposes and shall be retained for at least 3 years following the date the record was created. The records will include the following information:

- Each source's manufacturer name, model, and serial number
- The identity of each sealed source radionuclide and its estimated activity, expressed in millicuries
- Each radiographic device using depleted uranium shielding manufacturer's name, model number, and serial number
- The measured activity of each leak test sample, in microcuries
- The date the sample was collected.

Appendix E

Form E

LEAK TESTS FOR SEALED SOURCES

Please provide the requested information by checking the appropriate items. The completed Form E is a commitment by the Applicant to perform the leak test as indicated. This information will be incorporated into the Radioactive Material License as a Special License Condition.

SEALED RADIOACTIVE SOURCES WILL BE LEAK TESTED AS INDICATED:

_____ **1. Leak tests will be performed by the Licensee**

- a. Frequency of leak test _____
- b. Operating Procedure Number _____
- c. Title of individual performing the leak test _____

_____ **2. Leak tests will be performed by the applicant using a commercial leak test kit:**

- a. Frequency of leak test _____
- b. Manufacturer of kit _____
- c. Model number of kit _____
- d. Name of company to perform assay of leak test samples _____
- e. Arkansas Vendor Registration Number _____
- f. Manufacturer's instruction will be followed in the use of the leak test kit _____
- g. Operating Procedure Number _____
- h. Title of individual performing the leak test _____

_____ **3. Leak tests will be performed by a consultant or a commercial firm:**

- a. Frequency of leak test _____
- b. Name of Company _____
- c. Address _____
- d. License Number _____
- e. Arkansas Vendor Registration Number _____
- f. Operating Procedure Number _____
- g. Title of individual performing the leak test _____

**EXPOSURE OR STORAGE DEVICES USING DEPLETED URANIUM SHIELDING
WILL BE LEAK TESTED AS INDICATED**

_____ **1. Leak tests will be performed by the Licensee**

- a. Frequency of leak test _____
- b. Operating Procedure Number _____
- c. Title of individual performing the leak test _____

_____ **2. Leak tests will be performed by the applicant using a commercial leak test kit:**

- a. Frequency of leak test _____
- b. Manufacturer of kit _____
- c. Model number of kit _____
- d. Name of company to perform assay of leak test
samples _____
- e. Arkansas Vendor Registration Number _____
- f. Manufacturer's instruction will be followed in the use of the leak
test kit _____
- g. Operating Procedure Number _____
- h. Title of individual performing the leak test _____

_____ **3. Leak tests will be performed by a consultant or a commercial firm:**

- a. Frequency of leak test _____
- b. Name of Company _____
- c. Address _____
- d. License Number _____
- e. Arkansas Vendor Registration Number _____
- f. Operating Procedure Number _____
- g. Title of individual performing the leak test _____