NORTH DAKOTA
DEPARTMENT OF HEALTH

Division of Air Quality

RADIOACTIVE MATERIAL LICENSING GUIDE

Preparation of Leak Test Applications

Revised February 2, 2006

This guide describes the information the Department staff needs to evaluate applications to perform leak test analyses in-house or for customers. The application must describe, in detail, the following items:

A. The qualifications of the individual who will supervise the performance of the leak test analyses.

B. The radionuclides that will be analyzed and the emission of each to be measured.

C. The procedures to be followed in taking sample wipes or obtaining samples. These should include specific methods for foil sources, plated sources, sealed sources of large activity, and sealed and/or plated radium or thorium sources if your service is to encompass such testing. If a kit is to be distributed to customers, a sample kit with its instruction sheet must be provided for evaluation.

D. A description of the counting equipment including its make, model number, and minimum detectable activity. For each isotope to be leak tested, the emissions to be measured and the method of detection should also be specified. For example, radium source leak testing may measure the total alpha emission or gamma emission of radon plus daughters, or measure the total alpha emission or gamma emission of just the daughters, depending upon the proposed sample collection method.

E. A description of the standard source(s) and the procedures to be used to calibrate the counting equipment. The activity of the standards should be of the same order of magnitude as the leak test criteria, normally 0.005 microcuries amounts. Standards must also be selected to present the same types of radiation to the counting equipment as the samples. For example, with a cesium-137 wipe having both beta and gamma emissions, if the beta emission is to be counted by the detection equipment, the standard source must be a beta source also. Similarly, sealed radium standards would be appropriate only for gamma counting of radium leak test samples.

F. The method used for counting the sample, standard, and background, and the calculations necessary to derive, in microcuries, the amount of removable contamination present on the source, or in the case of radium, the amount leaking from the source in 24 hours. The particular extrapolation method to be used for radium or thorium needles and plaques, or any other sources for which sample collection is indirect (collection of daughter products), should also be described.

G. A copy of the leak test report to be provided to a customer.

(Note: Leak test results must be reported in microcuries. Negative results may be reported as "less than ___ microcuries" where the minimum detectable activity of the counting equipment, as described in Item 3, is specified in the blank space.)

A source is to be considered leaking if it has 0.005 Ci of removable contamination on its surface, or if it leaks 0.001 Ci of daughter products in 24 hours. The customer shall be informed that the sealed source is "leaking" or "not leaking."

H. Procedures for proper handling and arrangements for disposal of leaking sources if leak tested in-house.

I. A description of the records to be kept for each sample counted and its associated leak test calculation. A copy of the customer report must also be kept.

AMENDMENT AND RENEWAL OF LICENSES

Applications for amendment of existing licenses should be filed in the same manner as initial applications or may be filed in letter form. The application should clearly identify the license which is to be amended by license number. The exact nature of the requested changes should be specified and additional supporting information, as necessary, should be provided.

Licenses are normally issued for a period of five years. An application for license renewal filed thirty days or more before expiration assures that the existing license will not expire until the new application has been finally acted upon by the Department.

Renewal applications should contain complete and up-to-date information concerning the applicant's current program. References to previously submitted documents should be clear and specific and specify the document by date and indicate pertinent information by page and paragraph.

An application for amendment must be accompanied by the appropriate fee of $140, as directed in Chapter 33-10-11 of the rules. An annual fee of $650 shall be paid by January 1 or each year the license is active:

No fee is required for license renewal. Fee payments shall be made by check, draft, or money order made payable to the North Dakota Department of Health.

NOTE: For a combination license authorizing both leak test analysis services and instrument calibration services (for other licensed entities), the Amendment fee is $150; and the Annual Fee $870.