



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

March 9, 2009

South Dakota School of Mines
and Technology
ATTN: Jerilyn Roberts
Campus Environmental Health & Safety Manager
501 East Saint Joseph Street
Rapid City, SD 57701

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING
LICENSE RENEWAL APPLICATION DATED APRIL 14, 2009

Dear Ms. Roberts,

This letter is in reference to the radioactive materials license renewal application dated April 14, 2009. The following information is needed to continue our review of the subject application.

1. The renewal application included a change to the Radiation Safety Officer. Please clarify whether Dr. Sherry Farwell will continue to be the Authorized User for Ni-63 and/or do you want to be authorized for Ni-63 as well?
2. Item 8 on Page 2 of the application describes the training program. Please describe how the licensee will assess each individual's training qualifications. In addition, describe how the licensee will assess the overall training program. Confirm that the training will be given both initially, before beginning any duties in the vicinity of the radioactive materials, and at intervals not to exceed 12 months after the initial training. Please describe how lessons-learned, revisions to the radioactive materials program or other changes in the program will be communicated, incorporated into the training program, and assessed as part of the overall program.
3. The license renewal application requests unsealed radioactive materials that have a more significant health and safety impact than the radioactive material which has been licensed historically. Please describe the types and numbers of survey and monitoring instruments available to the radiation safety staff. The description should include the type of instrument and probe, the sensitivity range (e.g., mR/hr or counts per minute (cpm)), and the instrument's intended purpose (e.g., monitoring, surveying, assaying or measuring.) You must have at least one portable radiation monitoring instrument that is capable of making quantitative measurements required for such activities as: radiation level measurements of packages prior to transportation, package receipt surveys, incident and assuring that radiation levels in unrestricted areas are in compliance with NRC regulations.

4. Please provide a copy of the written procedures that have been developed for safe use of radioactive materials, responding to spills, and general emergency response. The procedures should include radioisotope-specific safety guidelines. NUREG-1556, Volume 7, Appendix P may be used as a reference.
5. The license renewal application requests radioactive materials in quantities greater than 1 millicurie and which have greater than 500 keV average energy (e.g., P-32, N-16) or positron annihilation (e.g., N-13). Please commit to the following safety precautions when using such materials:
 - a. The use of low-density plastic shielding in order to keep bremsstrahlung radiation to a minimum.
 - b. A mandatory radiation survey and wipe test for radioactive contamination after each use.
 - c. The use of extremity monitors for procedures that involve 1 millicuries or more.
 - d. A dry run prior to the performance of unfamiliar procedures in order to preclude unexpected complications. In addition, it is recommended that the RSO be present during new procedures.
 - e. The use of eye protection for procedures that involve 10 millicuries or more.

For example, for P-32 with an average beta energy of 0.7 MeV, the dose rate from $1 \mu\text{Ci}/\text{cm}^3$ in water is 1.48 rads/hour.

For beta particle energies above 0.6 MeV, the dose rate through the nominal protective skin layer is 9 rads/hr from a uniformly thin deposit of $1 \mu\text{Ci}/\text{cm}^2$ of a beta emitting radionuclide.

The dose rate at 1 cm from 1 mCi of P-32 is approximately 200 rads/hr.

6. Please describe whether the newly requested material will be unsealed material or in liquid solution.
7. Please describe the calibration of the monitoring dosimetry to the energies of the beta radionuclides requested, especially for N-16. Commercial vendors typically do not calibrate their dosimetry to the energy of N-16.
8. The radionuclides for N-16 and N-13 are very short (seconds), what is the purpose of use for these radionuclides (e.g., coincidence counting) and how will you receive them?
9. The application provided the training and experience for Dr. Sundeshar, which indicated that "Several of his research investigation involved the use of H-3" (tritium). The use of tritium is not sufficient training and experience for authorized use of the other requested radionuclides with higher beta energies. Please provide a resume for Dr. Sundeshar or specify another Authorized User, including resume. The resume should demonstrate training and experience in the biological hazards associated with the radionuclides requested, including specific isotopes handled, the maximum quantities of materials handled, where the experience was gained, the duration of experience and the type of use. If the training and experience is not available, then you may request a partial list of

radionuclides to be authorized now and provide separate training and experience for the proposed authorized user at a later date.

Our review of the license renewal application will continue upon the receipt of the above requested information. Please refer to the Docket, License, and Control numbers below in your reply. If you wish, your reply may be transmitted electronically to rachel.browder@nrc.gov. You should then mail the original copy of any electronically transmitted document to the address in the letterhead above. If we do not receive a reply within thirty (30) days from the date of this letter, we shall assume that you do not wish to pursue the additional beta energy radionuclides and we will process your license renewal for the N-63 sealed sources and the H-3 (tritium) unsealed sources, only.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Thank you for your cooperation.

Sincerely,



Rachel S. Browder, Sr. Health Physicist
Nuclear Materials Safety Branch B

Docket: 030-35198
License: 40-27640-01
Control: 472221