

MAR 27 1986

Indiana University School of Medicine
Evansville Center for Medical Education
ATTN: George D. Guthrie, Ph.D.
Radiation Safety Officer
8600 University Blvd.
Evansville, IN 47712

Re: Application dated May 11, 1984 regarding renewal of NRC License
Number 13-15734-01

Gentlemen:

In order to complete our review, we need information on the following items:

1. Instrument Calibration

- a. Describe your instrument calibration procedures. State the frequency, and describe the methods and procedures for the calibration of survey and monitoring instruments, as well as any other instruments and systems used in the radiation program, such as measuring instruments used to assay sealed sources leak-test samples, contamination samples (e.g., air samples, surface "wipe" samples, and bioassay samples).
- b. An adequate calibration of survey instruments usually cannot be performed with built-in check sources. Electronic calibrations that do not involve a source of radiation are also not adequate to determine the proper functioning and response of all components of an instrument.
- c. Daily or other frequent checks of survey instruments should be supplemented every twelve months with a two-point calibration on each scale of each instrument with the two points separated by at least 50% of the scale. Survey instruments should also be calibrated following repair. A survey instrument may be considered properly calibrated when the instrument readings are ± 10 percent of the calculated or known values for each point checked. Readings within ± 20 percent are considered acceptable if a calibrated chart or graph is prepared and attached to the instrument.
- d. If you propose to calibrate your instruments, a detailed description of planned calibration procedures should include, as a minimum:
 - (1) The manufacturer and model number of source(s) to be used.
 - (2) The nuclide and quantity of radioactive material contained in the source.

- (3) The accuracy of the source(s) and the traceability of the source to a primary standard.
- (4) The step-by-step procedures including associated radiation safety procedures.
- (5) The name(s) and pertinent experience of person(s) who will perform the calibrations. (Regulatory Guide 10.8, Appendix D is enclosed for your information.)

If you intend to contract out the calibration of instruments, the name, address, and license number of the firm should be specified together with the frequency of calibration. You should contact the firm that will perform the calibrations to determine if information concerning calibration procedures has been filed with the Commission. If this information concerning calibration procedures has not been filed, it should be obtained and submitted.

2. Surveys

After review of your proposed survey program, criteria indicated does not satisfy our concern(s) that an adequate number of survey(s) at intervals frequent enough to prevent unnecessary exposure or spread of contamination will be performed. We request that you reconsider your submission in light of the following:

- a. Surveys should be performed weekly regardless of the isotope, whenever millicurie amounts have been used. Laboratory area(s) where only small quantities of radioactive material (less than 200 UCi at any one time) may be surveyed monthly. We have enclosed Regulatory Guide 8.23 for your review. Although designed for medical institutions, the criteria should be applicable for your program.
- b. Regardless of frequencies of use, surveys of radioactive material storage and waste storage area(s) must be surveyed at frequencies often enough to assure that materials are secured from unauthorized removal and to prevent spread of contamination (e.g., storage area(s) should be surveyed weekly).
- c. Clarify who will perform surveys. Surveys may be performed by the individual using radioactive material, by the Radiation Safety Officer, or by some other individual designated by the RSO. If the routine surveys will not be performed by the RSO, we recommend that the RSO perform independent surveys at a frequency not exceeding three months.

- d. Acceptable limits for the unrestricted release of facilities and equipment, must be equivalent to the criteria contained in "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses...", July 1982. Your program should incorporate the above guidance for final releases, please confirm.

3. Phosphorus-32 Procedures

In support of your request for 200 millicuries of phosphorus-32, you should develop and submit special safety instructions to be provided to individuals using millicurie quantities of P-32. We recommend that your procedures include, but not be limited to, the following:

- a. The use of low density shielding (e.g., plexiglass) in order to keep Bremsstrahlung radiation at a minimum.
- b. A mandatory radiation survey and wipe test procedures after each use.
- c. The use of finger type extremity monitors for procedures that involve 1 millicurie or more.
- d. The use of a dry run prior to the performance of unfamiliar procedures in order to preclude unexpected complications. In addition, it is recommended that the Radiation Protection Officer be present during new procedures.
- e. The use of eye protection for procedures that involve 10 millicuries or more.

4. Package Receipt During Off-Duty Hours

Please supplement your receipt procedures to include precautions to be followed in the event of receipt of byproduct material packages during off-duty hours. As a minimum, these procedures should include:

- a. Designation of a central receiving/storage point
- b. Designation of responsible individual(s)
- c. Precautions to be followed in the event of receipt of a damaged byproduct material package, including:
 - (1) Notification of the R.S.O.

- (2) Retaining delivery personnel until it can be determined that neither they nor their delivery vehicle is contaminated
- (3) Proper handling procedures for packages suspected of being contaminated

(See Appendix E of Regulatory Guide 10.8, enclosed).

5. Use of Material in Animals

If radioactive materials are to be used in animals, please submit:

- a. A description of the animals' housing facilities.
- b. A copy of the instructions provided to animal caretakers for handling of animals, animal waste, carcasses, and cleaning and decontamination of animal cages.

If you have any questions or require clarification on any of the information stated above, you may contact us at (312) 790-5625.

We will continue our review of your application upon receipt of this information. Please reply in duplicate, within 30 days, and refer to Control Number 76786.

Sincerely,

Original Signed By
J. R. Madera
Materials Licensing Section

Enclosures:

- 1. Regulatory Guides 8.23 and 10.8
- 2. Guide for the Decontamination of Facilities and Equipment

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