[illegible] (7-5-66)

MAY 1 1 1966

Department of the Army
Office of the Surgeon General
Washington, D. C. 20315

Attention: Lt. Col. Bernard Goldstein

Gentlemen:

Enclosed is Amendment No. 5 to License No. 5-16-23, held by Fitzsimons General Hospital, which extends the expiration date to July 31, 1966.

As we discussed in our telephone conversation, the Hospital should submit a revised application to indicate the types and quantities of byproduct material and specific uses outside Fitzsimons Hospital, which the Hospital desires to carry out.

Sincerely yours,

Nathan Bassin
Isotopes Branch
Division of Materials
Licensing

Enclosure:
As stated above

bcc: Compliance Region I
Standard Branch Dist.

A/26

OFFICE ▶	DML:IB					
SURNAME ▶	NBassin:bk					
DATE ▶	5/9/66					

631 NE

Form AEC-313 (5-58)	ATOMIC ENERGY COMMISSION **APPLICATION FOR BYPRODUCT MATERIAL LICENSE**	Form approved. Budget Bureau No. 38-R027.4

INSTRUCTIONS.–Complete Items 1 through 16 if this is an initial application. If application is for renewal of a license, complete only Items 1 through 7 and indicate new information or changes in the program as requested in Items 8 through 15. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail three copies to: U. S. Atomic Energy Commission, Washington 25, D. C. Attention: Isotopes Branch, Division of Licensing and Regulation. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30 and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20.

1. (a) NAME AND STREET ADDRESS OF APPLICANT. *(Institution, firm, hospital, person, etc.)*

Department of the Army, Fitzsimons General Hospital and U. S. Army Medical Research and Nutrition Laboratory, Denver, Colorado 80240

(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. *(If different from 1 (a).)*

Summit of Pikes Peak, Colorado

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

U. S. Army Medical Research and Nutrition Laboratory, Fitzsimons General Hospital, Denver, Colorado

3. PREVIOUS LICENSE NUMBER(S). *(If this is an application for renewal of a license, please indicate and give number.)*

License No. 5-46-13(A66)

4. INDIVIDUAL USER(S). *(Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in Items 8 and 9.)*

As specified in License No. 5-46-13(A66) condition 12

5. RADIATION PROTECTION OFFICER *(Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)*

As specified in Application (dtd 6 Dec 63 for License No. 5-46-13(A66)

6. (a) BYPRODUCT MATERIAL. *(Elements and mass number of each.)*	(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. *(If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)*	
A. Iodine-125	**A. Albumin or Globulin**	**A. 1.0 mc**
B. Chromium-51	**B. Chromate**	**B. 1.0 mc**
C. Hydrogen-3	**C. Tritiated Water**	**C. 5.0 mc**
D. Sulfur-35	**D. Sulfate**	**D. 5.0 mc**
E. Bromine-82	**E. Bromide**	**E. 5.0 mc**

7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. *(If byproduct material is for "human use," supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)*

See attached Appendix I.

76654

(Continued on reverse side)

APPENDIX I

REQUEST FOR APPROVAL FOR USE OF RADIOISOTOPES AT THE SUMMIT OF

PIKES PEAK, COLORADO

The summit of Pikes Peak, Colorado (elevation 14,100 feet) is available for research purposes to the U. S. Army Medical Research and Nutrition Laboratory, Fitzsimons General Hospital, Denver, Colorado, from May through November 1966. It is planned to study the effects of high altitude upon the blood volume regulation of normal and splenectomized dogs.

Basic circulatory and blood gas measurements will be made in duplicate at the Denver laboratory and during exposure to 14,100 feet at Pikes Peak, Colorado. In addition, the following measurements will be made simultaneously: red cell, plasma and total blood volume, total body water, extra and intracellular fluid, blood and total exchanged sodium, potassium and chloride.

Plasma volume will be measured by Iodine-125 labeled albumin or globulin dilution. Intravenous injections of 5-10 μc dosages will be made for each of four determinations per dog.

Red cell volume will be measured by Chromium-51 labeled cell dilution. The dog's own cells will be previously incubated with the sodium radiochromate and washed three times prior to injection. Dosages and number of determinations are identical to those for I-125.

Total body water will be determined by tritiated water dilution. Fifty to seventy-five microcuries per determination for three determinations per dog will be employed. Extracellular water will be estimated with sulfate-35 dilution or bromine-82 dilution, whichever proves most satisfactory in trials at the Denver laboratory, and intracellular water by difference. Fifty microcuries of sulfur-35 or bromine-82 will be given intravenously per determination for a total of three determinations per dog.

Experiments involving radioisotopes will follow procedures set forth by the Radioisotope Committee, [redacted]. Determinations involving isotopes will be conducted in the [redacted] Field Laboratory trailer at Pikes Peak, Colorado. All isotope materials will be transported with the investigators by automobile to the laboratory either in plastic containers which, in turn, will be sealed in a one-half inch lead container. Unused portions will be returned in like manner. All radioactive samples from the animals will be transported to the Denver Laboratory by car while in lead containers for analysis.

76654

Appendix I (Request for Approval for Use of Radioisotopes at the Summit of Pikes Peak, Colo) Cont'd

All waste materials, including urine, feces, glassware, syringes and needles etc. will be returned to Denver under similar precautions. No labeled or contaminated material of any kind will be disposed of at Pikes Peak. Animal cages, glassware and other equipment coming into contact with labeled blood will be decontaminated at the Denver laboratory. Stainless steel metabolism cages will be utilized so the complete urine and fecal collections can be made and disposed of as described.

The experimental area at Pikes Peak will be continuously monitored with an end-window detector and rate meter (Lebitron, Nuclear Chicago, Model 1619A). Area surveys and transportation of materials will be monitored with a portable survey meter (Nuclear Chicago, Model 2612), and area swipes will be taken for liquid scintillation counting (Packard, Model 3003) for tritium.