CRB

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Nuclear Consultants Corp. Pharmaceutical Division

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April 20, 1960

Mr. Cecil Buchanan
Licensing Branch
Isotopes Division
U.S.A.E.C.
Washington 25, D.C.

Dear Mr. Buchanan:

It was good to see you and your associates last week and I want to thank you for taking so much time from your busy schedule to talk with me.

We have already prepared and sent off to you the applications for testing of sealed sources and the licenses for shipping sources to our Mr. F. Comer in Cleveland. Enclosed is the outline we propose to send to radiologists or others who are requesting information or licensing procedures for cobalt.

Please look them over and make any comments you feel are applicable. We would appreciate your comments at your earliest convenience since we have a number of inquiries we should like to answer.

The application for a separate license for the use of cobalt in the location of sewers and underground pipes will be out in the near future.

Thanks again.

Very truly yours,

NUCLEAR CONSULTANTS CORPORATION

W.R. Konneker, Ph.D.
President

WRK:bnp
enclosures

Following is the info. .tion needed for filling out an ..E.C. application for Co-60 metallic sources.

An institutional license is easier to secure than a private practice license. The following instructions are laid out to conform with the institutional type of license except where indicated for private practice license.

The physician who will be responsible for the Cobium, individual user, or the applicant should have training in compliance with the following:

The physician should be (1) a qualified specialist in therapeutic radiology (diploma of the American Board of Radiology will serve as evidence of such qualification) in addition to having at least three years experience in therapeutic radiology or (2) a qualified specialist in another field (diploma of the respective specialty board will serve as evidence of such qualification) appropriate to the use being proposed, with training and experience in radiation dosimetry in addition to having at least three years experience in interstitial, surface or intracavitary use of radiation sources.

NOTE: If the radioisotope requested is to be used as an adjunct to or replacement for radium, information sould be presented concerning the means by which radium dosages are to be converted to dosages in terms of the radioisotope requested and the procedure to be employed to account for the decay of the latter.

Form A.E.C. 313

1. (a) Name and address of hospital
For private practice license: Physicians name and address;

(b) The name and address where material will be used - in most cases it is the same as 1. (a).
For private practive license: Name of any and all hospitals where this Cobium will be used. You may store the material in your office but it may only be used in a hospital. You may use the material in several different hospital, however, you must spell this out and list each one. Secure a letter from each one of these hospitals giving their permission to use Cobium in their hospital.

2. Department where material will be used - in most cases this is Radiology, if not specifiy where.
For private practice license: Note material will be stored here but used in places defined in 1. (b).

3. Any previous license numbers.

4. Name and title of individual who will be responsible - in most cases this is a certified Radiologist or a physician with adequate radium experience. (May also be an Ob-Gyn, Urologist etc. who meets these requirements).

5. Individual user plus the name of any isotope consultant or Radiation Health physicist who might be the hospital's consultant.

6. (a) Co-60
(b) Nuclear Consultant Cobium in the form of metallic wire, catalog number 521. Up to (200)mg eq (125)mc of Co-60 for use in standard applicators. These wires will be placed in the small stainless steel cells (N.C.C. catalog number 523) and not removed. The complete cell will be placed into the applicator or removed for storage. (Note: if this is not your desire, i.e. if you wish to use wires only, you must so state. You must then explain the technique and equipment available for handling the individual wires

6. (b) and especially describe the accountability system. This is how you are sure after use none of the small wires have been lost).
Up to (50)mg eq (31mc) of the cobium will be used in N.C.C. catalog number 522 sheath needles for interstitial work. These wires will be placed into the needle by N.C.C. and not removed by us. (Again if you wish to remove and interchange these, you must give the same information at outlined above.)

7. Human Use.

8. Where trained: Name of institution and location where the physician has received and Radium or isotope experience, or the place where he took his residency.
Duration of training: This would be the time spent in residency and years experience since handling Radium.

9. List here your board certification and the experience in handling of Radium. For example: "I am a board certified Radiologist and have employed Radium in my practice for the past eight years."

10. List all instruments by manufacturer's name and model number that will be used for measuring and monitoring, such as ionization chambers and geiger counters. It is advisable to have an ionization type of survey meter available.

11. Monitoring instruments will be checked each time used with one of the cobium sources. The instruments will be periodically checked and calibrated by a physicist or returned to the manufacturer for this.

12. List your film dosimetry service by manufacturer's name such as Nuclear Consultants Corporation and frequency of exposure report such as weekly, bi-weekly or monthly.

13,14 & 15:
See page 313a, 4c:

16. Have the hospital administrator sign and date all three copies. For private practice license: All copies will be signed by the physician whose name appears in 1. (a).

Form A.E.C. 313a, Page 1

1. (a) User's Name
For private practice license: Physician's name.
(b) Name and address of institution.
For private practive license: Physician's name and address.

2. Yes.

3. Yes.

4. (a)(b)(c) & 5. (a):
Co-60 in the form of Nuclear Consultants Corporation Cobium, catalog number 521. These will be in the form of metallic wire placed in stainless steel cells (N.C.C. #523) for use in standard applicators and in stainless steel sheath needles (N.C.C. #522) for use in interstitial work. (Note: if you intend to interchange these wire you must outline your handling techniques and equipment as well as your accountability system. The same equipment as used for Radium cells is acceptable but must be listed.)
Remember: In calculating exposure times, tables for radium may be employed making the necessary corrections. Since the output of one curie of Ra in

4. 1/2 mm of Pt . one meter is 0.841 r/hr and since the output of one curie of Co-60 under similar conditions is 1.35 r/hr this means 1 mc of Co-60 is equivalent to 1.35 divided by 0.841 equal 1.6 mg of Ra. Times will therefore be adjusted accordingly. Be sure to spell this out in your applications.
A typical answer for the dosage schedule could be: The Cobalt-60 will be used for the treatment of various carcinomas in exactly the same manner as Ra needles. In an applicator for treatment of CA of the cervix, the treatment dose will range from 7000-8000 mg hrs of Ra or 4400 to 5000 mc/hr of Cobalt-60. For use insterstitially as needles in tumors in the oral aavity, etc, the dose range is from 7000-10,000 gamma roentgens in a seven day period. A dose of 9000 to 10,000 gamma roentgens are delivered to a bladder tumor. Be sure to outline the procedures you wish to use and the dosage schedule you propose to use.
When not in use the cobium will be stored and transported in containers designed to safely shield up to 200 mg eq of Cobalt (125mc). The radiation at the surface of the storage container will be no greater than 200 mr/hr and at the same time no greater than 10 mr/hr at 1 meter from the center of the container. For portable containers, the radiation will not exceed 50 mr/hr at 6 inches from the surface of the container. Any storage container will carry the official radiation symbol and the words "Caution Radioactive Materials". It will also be equipped with a secure locking device.
The following decay schedule will be used to correct dosage times due to the decay of the Cobalt:

Time in Months	Percentage Material Remaining
0	100
6	93
12	88
18	82
24	77
30	72
36	68
42	63
48	59
54	55
60	52

5. (a) Refer to above.
(b) No.

6. Not applicable.

7. Yes. Along with this license application a brief resume should be submitted on at least three physicians which will constitute your isotope committee. This originally should include the doctor's name and title, place of education, certified boards, society memberships, staff status and any prior positions held. For private practice license: Don't answer.

8. Don't answer.
(a) For private practice license: Refer to 313 Page 1, 1.(b) which is the letter secured from the institutions where isotopes will be used.
(b) Yes.