



THE
UNIVERSITY
OF
ILLINOIS
AT
CHICAGO

Radiation Safety Office
Room 339 General Hospital
Box 6998, Chicago, Illinois 60680
(312) 996-7429

August 7, 1985

B. J. Holt
Material Licensing Section
U. S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Dear Ms. Holt:

In response to your telephone call to the Radiation Safety Office, the attached information is submitted in completion of the request for the transfer of the teletherapy source to our irradiator license.

Please process this request as soon as possible to minimize the delay in issuing the amendment. Research and patient care are dependent upon use of the unit.

Sincerely,

Karen M. Hiemae
/9P

Karen M. Hiemae, Ph.D., B.D.S.
Interim Dean, Graduate College and
Associate Vice Chancellor for
Research & Graduate Education

KMH:ecp

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ATTACHMENT I

PROPOSED USE OF THERATRON-80 AS AN IRRADIATOR

The Theratron-80 teletherapy will be used to irradiate anything except living human beings, explosives or highly flammable liquids, as authorized by the Radiation Safety Committee. The purpose of the irradiations include research and development, education and training, and sterilization of samples including blood components.

ATTACHMENT II

EVALUATION PURSUANT TO 10 CFR 20.203(c)

- 203(c)(1) A 'High Radiation Area' sign will be posted at the entrance to the Irradiation Room.
- 203(c)(2) See 203(c)(6)
- 203(c)(3) See 203(c)(6)
- 203(c)(4) N/A
- 203(c)(5) N/A
- 203(c)(6)(i) The primary control device will be a locked door. The key for the door will be captured in the lock cylinder while unlocked. An interlock switch that must be activated before the beam can be turned "ON" will also be provided. The interlock switch will be located at or near the control panel. This key will also be captured when in the activated position. The door key and the interlock key will be physically attached to each other. This will therefore prevent the door from being opened while the beam is "ON" and prevent the completion of the interlock circuit while the door is open and/or unlocked.
- 203(c)(6)(ii) The door interlock will be used as the secondary control device. This interlock promptly retracts the source into the source head if the door is opened with the beam "ON" and requires re-setting at the control panel to re-initiate irradiation. The beam cannot be switched "ON" with the door open. The door lock can be opened from the inside so that no individual will be prevented from leaving the irradiation room.
- 203(c)(6)(iii) The walls are considered permanent structural components and are therefore exempt from this requirement. The door has been installed with the hinges inaccessible from outside the room when the door is closed and locked. Because failure or removal of the door is not credible in ordinary circumstances it is also considered a permanent structural component.

- 203(c)(6)(iv) A time delay system will be installed that prevents the beam from being turned "ON" until about 15 seconds have elapsed from when the door is closed. During this interval a visible and audible signal will be activated in the irradiation room. An emergency "OFF" button is installed in the irradiation room.
- 203(c)(6)(v) The operating procedures require that the operator visually determines all personnel have left the irradiation room immediately prior to beam initiation.
- 203(c)(6)(vi) The radiation monitor permanently mounted in the irradiation room will provide an audible and visible alarm if the beam is "ON" and the door is opened.
- 203(c)(6)(vii) The primary entry control system will be tested each day the facility is used. The test will be conducted prior to irradiation procedures.
- 203(c)(6)(viii) N/A
- 203(c)(f) N/A

ATTACHMENT III

THERATRON-80 OPERATING AND EMERGENCY PROCEDURES

OPERATING INSTRUCTIONS

1. Activate the power using the control panel power switch key.
2. Before entering the irradiation room:
 - a) verify that all personnel who will enter the irradiation room are wearing film badges.
 - b) turn the master key switch fully clockwise.
 - c) be sure the interlock testing has been performed prior to the first use each day. Do not use the irradiator if the interlocks are not functioning properly.
3. If the radiation monitor is alarming, a dangerous condition may exist. Do not enter the room. Follow the emergency instructions.
4. Visually check the irradiation room to be certain you are the last person to leave close and lock the door.
5. Make sure that the timer is "OFF".
6. Insert the panel interlock switch key and switch "ON".
7. Depress the reset button.
8. Set the desired irradiation time on the timer.
9. To start irradiation turn "ON" the timer switch.
10. On completion of irradiation, the source will return to the safe position. Switch the panel interlock "OFF" and remove the key. Proceed with item 2 above to remove the samples or set up the next exposure.
11. Record each irradiation in the log book provided.
12. Never leave the keys in the control panel unattended unless the door to the control room is locked.
13. The door to the irradiation room must be locked whenever the facility is not in use. The door key, interlock key and control panel key must not be left in the control room or the adjoining rooms to prevent unauthorized access.

EMERGENCY INSTRUCTIONS

1. During normal operation the following conditions should exist.

The red "BEAM ON" light will be extinguished when the source is "ON". The reverse is true when the source is "OFF". The entrance door must be fully closed and the panel interlock switch "ON" for the irradiator to operate. If the door is opened during irradiation, the source will be returned automatically to the safe position. If the radiation monitor alarm is "ON" proceed with Item 2 below. Press the "RESET" button on the alarm. The alarm should shut "OFF".

2. If for any reason the source fails to return to the "OFF" position after the irradiation time is completed, or when the irradiation room door is opened:
 - a) Immediately leave the irradiator room and close and lock the door.
 - b) Push the red emergency bar on the control panel.
 - c) Call the Radiation Safety Office (6-7429) and request assistance. (After normal working hours, call 6-6777 University Police, and request the Radiation Safety Call List).
 - d) Do not allow anyone into the room until the Radiation Safety Office or a representative of AECL authorizes entry.
3. If the monitor is alarming while entering the irradiation room, follow the instructions in Item 2 above.