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0407

UNIVERSITY OF DETROIT

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DETROIT, MICHIGAN 48207

1980 FEB 26 AM 10 50

SCHOOL OF DENTISTRY

February 22, 1980

U.S. NUCLEAR REG
COMMISSION
SECTION

Mr. Michael A. Lemastra
Materials Licensing Branch
Division of Fuel Cycle and Material Safety
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Control No. 01456

Mr. Lemastra:

In reply to your undated letter just received regarding renewal of License No. 21-00241-06, I have enclosed two (2) copies each of several Attachments to be added to the renewal application sent September 28, 1979. These Attachments describe our radiation protection program, leak testing procedures, personnel, access to the irradiator, and emergency procedures. I hope the information in this form (Attachments) is acceptable.

Incidentally, your letter signed by William Walker, Jr./fh did not contain Form NRC-313I as indicated in the first paragraph.

We are also still having an address problem (see enclosed envelope with corrections). Since the general license is held by the parent institution, that address was used as the Institution in 1 (a) of the application per earlier (1969) instructions. For correspondence regarding License No. 21-00241-06, please use this address:

2985 E. Jefferson
Detroit, MI 48207

Also, our telephone numbers are: Dr. Roberts 446-1918
Dr. Blackwell 446-1917
Secretary 446-1914

Sincerely,

Joan M. Roberts

Joan M. Roberts, Ph. D.
Associate Professor
Physiology-Pharmacology

Encl.: 2 copies each Attachments E, F, G, and H

8004010.110
7pp.

COPIES SENT TO OFF. OF
INSPECTION AND ENFORCEMENT

Joan M. Roberts, Ph. D.
University of Detroit
School of Dentistry

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Detroit, Michigan 48207
0407

NAME OF APPLICANT

ADDRESS OF APPLICANT

ATTACHMENT E

Radiation Protection Program

Film badges (Tracerlab) are worn by personnel using the irradiator and are checked monthly.

Leak testing of the irradiator is done by Dr. Joan M. Roberts in accordance with Amendment 04 of License No. 21-00241-06 dated Feb. 2, 1979. The samples are counted by Dr. Leo H. Blackwell, Radiation Safety Officer of the School of Dentistry (see Attachment B).

Leak testing procedures are described in Attachment F.

NAME OF APPLICANT

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ATTACHMENT F

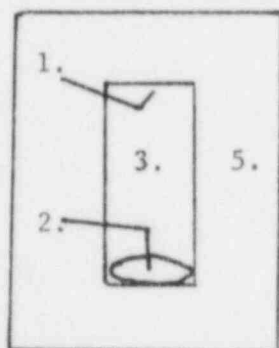
Leak Testing Procedures

Time interval - leak tests are performed regularly at six month intervals by Dr. Joan M. Roberts.

Procedures - wipe tests are made of the following areas:

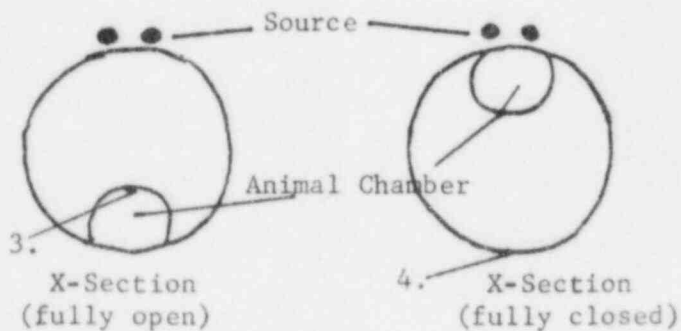
1. top of animal chamber,
2. bottom of animal chamber,
3. back of animal chamber when fully open,
4. back of animal chamber when fully closed, and
5. front surface of entire unit (see Diagram A).

Dry 1 inch Whatman #1 filter paper circles are used to wipe the surfaces indicated. Two circles are used as blanks and counted first on a Packard Tri-Carb liquid scintillation spectrometer which is calibrated and has sufficient sensitivity to detect 0.05 microcuries.



FRONT
(open)

DIAGRAM A



Joan M. Roberts, Ph. D.
University of Detroit
School of Dentistry

985 E. Jefferson
Detroit, Michigan 48207

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ATTACHMENT G

Personnel and Access to Irradiator

Personnel - no one uses the irradiator except Dr. Joan M. Roberts.
Materials to be used by students or others are irradiated for them by Dr. Roberts.

Keys - there are only two (2) keys to the room housing the irradiator.
Dr. Joan M. Roberts has one key and the Business Office, located in another part of the same building as the irradiator, has the other key for emergency access to the phone, electrical, and plumbing connections.

There is only one (1) key to the operator console and it is in the possession of Dr. Joan M. Roberts.

The door to the irradiator room is kept locked at all times, even when in use, because of its remote basement location.

NAME OF APPLICANT

ATTACHMENT H

ADDRESS OF APPLICANT

Taken from: Instruction Manual and Owner Guide for Model M Gammator

3-4. Emergency Procedures

3-4.1 Exposure to Fire:

The Model M Gammator has been designed to withstand exposure to severe fire conditions without significant loss of shielding effectiveness or leakage of the source material. However, the operability and appearance of the Gammator may be affected by melting and resolidification of the lead shielding and damage to electrical and mechanical components. To evaluate the effect of exposure to fire, however slight, the following procedure is recommended.

- a. After the fire is extinguished, measure the dose rate upon approaching the Gammator with a gamma radiation survey meter. If the readings are the same as those existing before the fire, the shielding integrity has not been affected, and the next step may be taken with safety. If the readings are higher than those existing before the fire, see Section 3-5, Maintenance.
- b. Perform a leak test of the source according to 3-3.1c. If no increase above background is obtained, proceed with the next step. If there is a significant increase above background, the possibility of a leaking source exists and the procedure described in 3-4.2 should be followed.
- c. Check the Gammator for evidence of damage to electrical and mechanical components. See Section 3-5, Maintenance.

3-4.2 Suspected Source Leak:

If any significant readings above background are obtained from leak testing, there is reason to suspect a leaking source. If not determined by an organization performing the test, the microcurie equivalent of the result should be determined. If the result is of such magnitude that the source is considered to be leaking, see 3-4.3 on the following page. If the result is only slightly below that of a leaking source, perform another test and determine whether the new value indicated further removable contamination. If it does not, record the initial value. It is suggested that after such a high but "non-leaking" value is obtained, the Gammator should be leak tested each time prior to use, until the source integrity is confirmed. If significant removable contamination is obtained in repeated leak tests, consider the source to be leaking.

3-4.3 Confirming Leaking Source:

If leak testing indicates the existence of a leaking source (the license will define the level-usually 0.05 microcurie) or if significant amounts of removable contamination are removed in continued tests, use the following procedure.

- a. Place the leak tests materials in the sample chamber.
- b. Monitor hands of person performing the test.
- c. Check the counting equipment for proper operation. If there is any doubt about the reliability of the instrument, obtain another instrument and check it against the other.
- d. Measure the background at the place where the leak test counting was performed to check for interference which might cause spurious readings. Sources of interference include scattered X-rays from TV or other electronic equipment, and magnetic fields from welding machines, transformers, etc.
- e. Determine if any tracer solutions were used in the chamber as spilled solution would contribute to an abnormally high reading.

3-4.4 Repeated Leak Test:

- a. If the high result cannot be explained on the basis of faulty counting equipment or excessive background, repeat the leak test with extreme caution. Wear gloves when making the test.

If the second leak test continues to indicate a leaking source, use the following procedure:

- b. Protect personnel. Carefully monitor the person(s) who has performed the tests. Place any contaminated clothing in a plastic or other non-porous bag. Wash off any contamination on the skin.
- c. Prevent spread of contamination. Place a non-porous bag over the Gammator. Rope off the area surrounding the unit, and survey the room to mark the extent of the problem. Include a survey of all items which had been placed in the irradiation chamber during the preceding several days.
- d. Call Radiation Machinery Corporation.

- e. Inform the Director of the appropriate Atomic Energy Commission Regional Compliance Office for events of sufficient magnitude to be reportable under 10CFR20 or the possession license.

3-5. Maintenance

No maintenance or adjustment is provided or permitted on Model M Gammators except for repair or replacement of control system parts external to the shield. These parts are available from the factory if the user wishes to make repairs himself.

In the event of damage or failure of internal components from maloperation or accidents such as fire exposure, contact Radiation Machinery Corporation for advice. Factory repairs may be possible or disposal may be indicated.