Attachment 1

PROGRAM FOR MAINTAINING OCCUPATIONAL RADIATION EXPOSURES AT THE UNIVERSITY OF VIRGINIA AS LOW AS REASONABLY ACHIEVABLE

DECEMBER 4, 1979

I. Management Commitment

a. We, the management of this University, are committed to the program described in this paper for keeping exposures (individual and collective) as low as reasonably achievable (ALARA). In accordance with this commitment, we hereby establish an administrative organization for radiation safety and develop the necessary written policy procedure instructions to foster the ALARA concept within our institution. The organization will include a Radiation Safety Committee (RSC), and a Radiation Safety Office (RSO). We are committed to following the guidance provided by U. S. Nuclear Regulatory Guides 8.10 and 8.18.

b. In addition to maintaining doses to individuals as far below the limits as is reasonably achievable, the sum of the doses received by all exposed individuals will also be maintained at the lowest practicable level. It would not be desirable, for example, to hold the highest doses to individuals to some fraction of the applicable limit if this involved exposing additional people and significantly increasing the sum of radiation doses received by all involved individuals.

II. Radiation Safety Committee (RSC)

a. Review of Proposed Users and Uses

1. The Radiation Safety Committee will thoroughly review the qualifications of each potential Authorized User with respect to the types and quantities of materials and uses for which he has applied to assure that the user will be able to take appropriate measures to maintain exposure ALARA.

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2. When considering a new use of byproduct material, the Radiation Safety Committee will review the efforts of the Authorized User to maintain exposure ALARA. The user should have systematized procedures to ensure ALARA, and should have considered the use of special equipment such as syringe shields, rubber gloves, etc., in his proposed use.

3. The Radiation Safety Committee will ensure that the user justifies his procedures and that they will result in ALARA doses (individual and collective).

b. Delegation of Authority

1. The Radiation Safety Committee will delegate sufficient authority to the Radiation Safety Office for enforcement of the ALARA concept.
2. The Radiation Safety Committee will support the Radiation Safety Office in those instances where it is necessary for the Radiation Safety Officer to assert his authority. Where the Radiation Safety Officer has been overruled, the Committee will record the basis for its action.

c. Review of ALARA Program

The Radiation Safety Committee will review all instances of deviations from the ALARA philosophy and, at least annually, will review the entire radiation safety program in order to evaluate the University of Virginia's overall efforts for maintaining exposures ALARA. Information in support of the review will normally be supplied by the Radiation Safety Office.

d. Public Statement of Commitment by the Radiation Safety Committee to ALARA.

All elements of our institution will be informed of the Radiation Safety Committee's commitment to the ALARA philosophy.

1. The Radiation Safety Committee will ensure that employees are aware of the Radiation Safety Committee's commitment to the ALARA philosophy.

2. The Radiation Safety Committee will demonstrate its commitment to the ALARA concept through the methods employed in its review of proposed users and uses.

III. Radiation Safety Office (RSO)

a. Periodic Review and Audit of the Radiation Safety Program for Compliance with ALARA Concepts. Frequent reviews of procedures will be conducted.

1. The Radiation Safety Office will review and audit, on a regular basis (at least annually), the effectiveness of its own radiation protection program in maintaining doses (individual and collective) ALARA.

2. The Radiation Safety Office will review exposures of authorized users and occupational workers to determine that their exposures are ALARA.

b. The Radiation Safety Office's Education Responsibilities for an ALARA Program

1. The Radiation Safety Office will assure that authorized users understand the ALARA philosophy and know that management, the Radiation Safety Committee, and the Radiation Safety Office are committed to implementing the ALARA concept.

c. Cooperative Efforts for Development of ALARA Procedures

Individuals who must work with ALARA concepts will be given opportunities to participate in formulation of the procedures that they will be required to follow.

1. The Radiation Safety Office will maintain close contact with all users in order to develop ALARA procedures for working with radioactive materials.

d. Reporting and Reviewing Instances of Deviation from Good ALARA Practices

1. The Radiation Safety Office will investigate all instances of deviation from good ALARA practices; and, if possible, determine the causes.

When the cause is known, the Radiation Safety Office will propose changes in the program to maintain exposures ALARA.

2. The Radiation Safety Office will report all significant instances of deviation from ALARA concepts to the Radiation Safety Committee for review.

IV. Authorized Users

a. New Procedures Involving Potential Radiation Exposures

1. The Authorized User will consult the Radiation Safety Office and/or the Radiation Safety Committee before using radioactive materials for a new procedure.

2. The Authorized User will consider all procedures thoroughly before using radioactive materials to ensure that exposures will be kept ALARA. This may be enhanced through the application of trial runs.

b. Responsibility of the Authorized User to Those He Supervises

1. The Authorized User will thoroughly explain the ALARA concept and his commitment to maintain exposures ALARA to all of those he supervises.

2. The Authorized User will ensure that his occupational workers are trained and educated in good health physics practices and in maintaining exposures ALARA.

3. The Authorized User will be responsive to the radiation safety concerns of the individuals that he supervises.

c. Continuing Review of ALARA Concepts by the Authorized User

1. The Authorized User will continuously review his procedures to ensure that his ALARA program is optimal.

2. The Authorized User will maintain contact with the Radiation Safety Office to ensure that he is aware of and employs the most current methods to maintain exposures ALARA.

V. Occupational Worker

a. What the Occupational Worker Must Consider about ALARA

1. The worker will implement ALARA procedures developed by the Authorized User and the Radiation Safety Office.

2. The occupational worker will know what recourses are available if he feels that ALARA is not being promoted on the job.

3. The occupational worker will understand the ALARA concept and will review his own working conditions for the implementation of ALARA principles.

VI. Establishment of Action Levels in Order to Achieve Reductions in Individual Occupational Exposures

This institution hereby establishes exposure action levels for specific kinds or classes of operations which, when exceeded, will trigger investigation by the Radiation Safety Officer. The exposure action levels that we have established are listed in Section VII below. These levels apply to the exposure of individual workers. The exact levels have been determined based on our institution's radiation exposure history and a thorough analysis of our current program. We will maintain on file at our institution an account of the considerations used in establishing action levels.

We will investigate the causes of personnel exposures that exceed our established exposure action levels. In the event of a personnel exposure that exceeds our established action levels or 10% of Maximum Permissable Dose (MPD), whichever is higher, we will maintain accounts of our investigation for inspection by the NRC. As a minimum, these accounts will include the cause of the exposure, the action taken to correct the situation and the follow-up action taken.

VII. Action Levels

The specific action levels established by this institution are as follows:

Kind or Class of Operation	Action Level
1. Department of Radiology	10% of MPD
2. All other Departments	10% of MPD

Amended 8/7/81

VIII. Signature of Certifying Officials

We hereby certify that this institution is committed to the ALARA Program set forth above.

Ralph O. Allen
(Signature)

Harold W. Berk
(Signature)

Ralph O. Allen
Name

Harold W. Berk
Name

Chairman, Radiation Safety Committee
Title

Radiation Safety Officer
Title

Institution name and address:

Rectors and Visitors
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Radiation Safety Officer
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November 15, 1979

MEMORANDUM

TO: Mr. Merle G. Bickel, Radiation Safety Specialist

FROM: Harold W. Berk, Radiation Safety Officer Harold W. Berk

SUBJECT: Calibration procedures for Pocket Dosimeters

Pocket dosimeters used as personnel monitoring equipment shall be tested for calibration/response and leak rate at least once every six months and records maintained.

A. To determine the leak rate the following procedures shall be performed.

1. Zero pocket dosimeter;
2. Let pocket dosimeter stand for 24 hours; and
3. Record pocket dosimeter reading on Pocket Dosimeter Check Form as Leakage + Background over 24 hour period in mR.
4. If leakage exceeds 2% of full scale in 24 hours, immediately remove pocket dosimeter from service.

B. To calibrate the pocket dosimeters, expose them to a source of radiation whose calibration is NBS traceable. The dosimeters shall then be exposed for a time sufficient to get a reading of approximately 100 mR. Immediately after exposure:

1. Record reading on Pocket Dosimeter Operational Check Form in mR;
2. Let pocket dosimeter stand for 24 hours;
3. Read pocket dosimeter and record reading on Pocket Dosimeter Operational Check Form as Exposure + Leakage + Background over 24 hour period in mR;
4. Calculate percent error of reading taken immediately after exposure to that of the calculated exposure from the radiation source; and
5. If percent error exceeds ± 10% of the exposure from the radiation source, immediately remove pocket dosimeter from service.

HWB:ph