

# DENISON UNIVERSITY



GRANVILLE, OHIO 43023

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DEPARTMENT OF PHYSICS  
AND ASTRONOMY

May 5, 1981

Mr. D.J. Sreniawski, Chief  
Materials Radiation Protection  
Section 2  
United States  
Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

License No. 34-06325-04

Dear Mr. Sreniawski,

This letter refers to your letter and Notice of Violation dated 4-23-81.

Upon receipt of your letter and Notice of Violation a meeting of the Denison University Radiation Safety Committee was called and held on the morning of April 30, 1981. The committee reviewed the discussions that your inspector, Mr. S.R. Lusak, had with Dr. Roderick Grant, Radiation Safety Officer, during his visit on April 2, 1981. We then took up the specific incident and violation referred to in your letter, namely, the failure to perform bioassays for possibly thyroid uptake of I-131 during the use of this material in the Radiation Biology course taught by Dr. Gail R. Norris in the Fall semester, 1980-81. After some discussion, during which time Dr. Norris was present, it was pointed out that

1. this was the first time that this course had been taught since the renewal of this license,
2. Dr. Norris had been on leave at the Radiation Biology Division of Oak Ridge National Laboratories during the year in which the license renewal process and revision of procedures was taking place,
3. verbal instructions concerning the requirements for a bioassay had been passed on to Dr. Norris by Dr. Grant at the beginning of the course, and at the time that the I-131 was received, but no followup by Dr. Grant to assure that this had taken place was made,
4. no records of bioassays were kept, and none were performed, in violation of our license agreements (as stated in your Notice of Violation), and
5. the form of I-131 used by the students, and the quantity provided at each lab station (5 microcuries), made it unlikely that any contact leading to thyroid uptake could have occurred.

The committee determined that we could not now do any bioassays which would, six months after possible contact could have occurred, measure any thyroid uptake which might have happened at that time.

In reviewing our Bioassay Program, as agreed to in our letter dated April 6, 1979, the committee recognized that it is not clearly stated who is responsible for performing the bioassays at the beginning of the semester, nor as a followup when material is being used in the class. The committee therefore directed that those

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provisions be amended so that section (1) of our Bioassay Program statement should read:

- 1.) At the start of each semester each student and the instructor in the Radiation Biology class will be assayed with a monitor for the purpose of detecting the amount of radiation from I-131 or I-125 in the thyroid. The initial survey will be performed by or under the immediate supervision of the Radiation Safety Officer. This will serve as the baseline level and will be done two weeks before any I-131 or I-125 experiments are done.

Section (2) is modified to make explicit the responsibility for monitoring and reporting bioassays after use of the material begins:

- 2.) Within 6-72 hours after an I-131 or I-125 experiment is completed, all members of the Radiation Biology class and the instructor will be surveyed for uptake to the thyroid. This survey will be done by the course instructor, who will report his findings to the Radiation Safety Officer within 72 hours. (If detectable uptake occurs the Radiation Safety Officer shall be notified within 24 hours, and shall repeat the measurements himself as soon as he is notified.)

The remainder of the provisions are as stated in that letter. I enclose the complete document which states our Bioassay Program as dated May 23, 1979. Our statements (1) and (2) above replace the statements (1) and (2) of that document.

We assume that we are now in full compliance with our agreement. The first application of these procedures will occur during the Fall, 1981-82 semester when the Radiation Biology course is next taught.

I hereby affirm, under oath, that these are our full and correct responses to your Notice of Violation, and that these provisions will be carried out as stated here and in previous documents herein referenced.

*Roderick M. Grant May 5, 1981*  
Roderick M. Grant, Radiation Safety Officer

*Signed in my presence this 5th*  
Witness:  
*day of May 1981.*

*Maxine C. Binkley*  
MAXINE C. BINKLEY  
Notary Public, State of Ohio  
My Commission Expires Aug. 24, 1983

DENISON UNIVERSITY  
RADIATION SAFETY MEMO  
DATE: May 5, 1981

RSO: R.M. Grant, Physics Dept.  
Office: 03 Barney Science  
Phone: 614-587-0810, Ext. 506

### BIOASSAY PROGRAM

Bioassay programs for I-131 and I-125:

- 1.) At the start of each semester each student and the instructor in the Radiation Biology class will be assayed with a monitor for the purpose of detecting the amount of radiation from I-131 or I-125 in the thyroid. The initial survey will be performed by or under the immediate supervision of the Radiation Safety Officer. This will serve as the baseline level and will be done two weeks before any I-131 or I-125 experiments are done.
- 2.) Within 6-72 hours after an I-131 or I-125 experiment is completed, all members of the Radiation Biology class and the instructor will be surveyed for uptake to the thyroid. This survey will be done by the course instructor, who will report his findings to the Radiation Safety Officer within 72 hours. (If detectable uptake occurs the Radiation Safety Officer shall be notified within 24 hours, and shall repeat the measurements himself as soon as he is notified.)
- 3.) We shall repeat the procedure at two intervals for the remainder of the semester if the following condition holds: the thyroid burden for each person  $\leq$  less than 0.12 microcurie for I-125 or less than 0.04 microcurie for I-131.
- 4.) If thyroid burdens are above level mentioned in 3.), we will cease all use of I-125 or I-131 and then:
  - a.) examine the laboratory to determine the cause of exposure and evaluate the situation for further exposures,
  - b.) implement corrective procedures to eliminate exposure,
  - c.) a repeat bioassay shall be taken within two weeks to determine the effective half-life of the IN VIVO isotope,
  - d.) notification shall be provided as required by 10CFR Part 20,
  - e.) if the thyroid burden exceeds 0.5 microcurie of I-125 or 0.14 microcurie of I-131, we shall refer the person to the medical health physics physician at The Ohio State University School of Medicine and carry out repeated bioassays at one week intervals until the burden becomes less than 0.12 microcuries of I-125 or 0.04 microcuries of I-131.