



University of Wisconsin-Madison

SAFETY IS OUR CONCERN...

SAFETY DEPARTMENT
317 N. Randall Avenue
MADISON, WISCONSIN 53715
608 262-8769 - 262-0667

October 23, 1984

Dr. Bruce Mallett
Nuclear Regulatory Commission
Region III
Material Licensing Section
799 Roosevelt Rd.
Glen Ellyn, IL 60137

LIC FEE

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Date	11/5/84
Log	NO-2 III
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Action Compl.	11/6/84

Dear Dr. Mallett,

We would like to renew our irradiator license number 48-00361-16. With the exception of the items listed below, we will possess and use the licensed material in accordance with statements, representations and procedures contained in the two applications dated September 25, 1979; application dated February 20, 1980; and letter dated March 9, 1982.

Items we want to change are as follows:

1. We have included an updated list of Health Physics instruments as Attachment 10. This replaces attachment 10 in the original application.
2. A new attachment 11, "Calibration Procedures", is included to replace Attachment 11 in the original application.
3. Pages 1 and 2 of the "Order Modifying Certain NRC Licenses", dated 3 July, 1984, are now included as part of the operating procedures for the irradiator. A copy of the order is available to all operators in the irradiator room.
4. A new list of emergency phone numbers is included as Attachment 14A.

If you have any questions about this application, feel free to call me at (608)262-8769.

Sincerely,

Sue Engelhardt

Sue Engelhardt
Health Physicist Supervisor

8508020166 850607
REG3 LIC30
48-00361-16 PDR

CONTROL NO. 77698

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REGION III

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ATTACHMENT #10

RADIATION DETECTION INSTRUMENTS

Please refer to the pages immediately following for a list of the health physics detection instruments maintained by the health physics staff. These instruments are available as back-up equipment to all users on campus.

The room containing the irradiator contains an area monitor with a visible and audible alarm. This area monitor meets the requirements of the "Order Modifying Certain NRC Licenses", dated 3 July, 1984.

ATTACHMENT B1C

Health Physics Instruments

Geiger tube and ionization chamber survey meters; laboratory monitors; and gamma, beta, and neutron detection and measurement systems are available from many persons on campus. There is no exact accounting available for actual numbers. Health Physics Instruments available are:

Number	Instrument	Type of Radiation Detected	Range	Window Thickness	Use
1	Eberline Gas Proportional Alpha Counter Model PAC-46	alpha probe beta probe Tritium probe	0-500 cpm 0-500 cpm 0-500 cpm	0.85 mg/cm ² 0.85 mg/cm ² zero	Surveying and Measuring
16	Eberline GMS Model E-120	alpha, beta, gamma	0-50 mr/hr	1.4 mg/cm ²	Surveying
10	HP-190 End Window Probes				
6	HP-210 Pancake Probes				
1	Victoreen-Low Energy Survey Meter Model 440	alpha, beta, gamma, x-rays	0-300 mr/hr	1.0 mg/cm ²	Surveying
1	Victoreen-R/F Shielded Low-Energy X-ray Survey Meter Model 440RF/A	beta, gamma x-rays	0-300 mr/hr	Internal mylar 1.0 mg/cm ² External 0.005" magnesium	Surveying
1	Atomic Accessories Inc. - Tritium	alpha, beta	0-30,000 mCi/m ³ Tritium	None	Monitoring
1	Eberline Rad Owl - 1	alpha, beta, gamma	0-500 R/hr	1.7 mg/cm ²	Surveying
1	Eberline MS-1 & FC-1 Gas Flow Counter	alpha, beta	0-10 ⁵ cps	0-0.9 mg/cm ²	Measuring
3	Xetex 305B Digital Ratemeter	beta, gamma, x-ray	0-99.9 R/hr		Surveying
2	Xetex 409A Digital Dosimeter	gamma, x-ray	0-9999 mR		Surveying

(continued)

ATTACHMENT 810

Health Physics Instruments (continued)

Number	Instrument	Type of Radiation Detected	Range	Window Thickness	Use
3	Canberra MCA Model 3100	gamma, x-ray	0-10 ⁵ cps	147.9 mg/cm ²	Measuring
2	2" x 2" NaI well &				
1	3" x 3" NaI well				
2	2" x 2" NaI solid				
2	Packard Liquid Scintillation Counters	beta	0-3x10 ⁵ cps	-	Measuring
3	Victoreen 470A "Panoramic"	alpha, beta, gamma	0-10 ³ R/hr	17-500 mg/cm ²	Measuring
1	Eberline PRM-6 with LEG-1 Probe	gamma, x-ray	0-5x10 ⁵ cpm	75.4 mg/cm ²	Surveying
1	Eberline PRS-1 "Rascal"	alpha, beta, gamma, neutrons	0-10 ⁵ R/hr 0-10 ⁵ cpm	Various	Surveying and Measuring
1	Eberline 6112 B Teletector	beta, gamma	0-10 ³ R/hr	30 mg/cm ²	Surveying
1	Eberline RO-5B Digital Ion Chamber	alpha, beta, gamma	0-999.9 mR/hr	1.7 mg/cm ²	Surveying
1	Eberline PNR-4	neutron	0-5 Rem/hr	-	Measuring
1	TM Analytic 1191 Automatic Gamma Counter	gamma, x-ray	0-8x10 ⁵ counts	-	Measuring
1	Narda Microline 8100	Electromagnetic Radiation Monitor with Probes: 8122 A (200 mR/cm ²) 8121 A (20 mR/cm ²) 8120 A (2 mR/cm ²)			

ATTACHMENT #11

Calibration of Instruments Listed on Attachment #10

Members of the health physics staff calibrate health physics survey instruments. Three Cs-137 sources are available for calibrations. A source manufactured by 3M, with a nominal activity of 1.0 Curie, is located at the Safety Department. The other Cs-137 calibration sources are contained in a J.L. Shepherd Model 78-2M dual source irradiator. The nominal activities of the sources are 130 Curies and 1.3 Curies.

The dual source irradiator has an NBS traceable calibration from J.L. Shepherd which has been verified using NBS calibrated ion chambers. The activity of the 3M source has recently been verified using a 100 cc. ion chamber calibrated using the J.L. Shepherd sources. Decay correction for the Cs-137 sources will be done at least semiannually.

The 3M source gives exposure rates from 0.07 mR/hr to 264 mR/hr using filters with transmission factors from 0.001 to 1.0 and varying distances. The J.L. Shepherd irradiator gives exposure rates from 11 mR/hr to 316 R/hr through use of the two sources and varying distances.

The instruments will be calibrated at least annually at two points on each scale, separated by at least 50% of the full-scale reading.

The room area monitor will be calibrated annually and its operation tested with a check source at least semiannually.

ATTACHMENT 14A

NOTIFICATION IN CASE OF RADIATION EMERGENCY

<u>Health Physics Staff</u>	<u>Office Phone</u>	<u>Home Phone</u>
M. Baumann (Health Physicist)	262-8769/0667	837-4589
J. Lorenz (Health Physicist)	262-8769/0667	238-7432
G. Polando (Health Physicist)	262-8769/0667	274-0579
D. Kaiser (Health Physicist)	262-8769/0667	256-6277
E. Boeldt (Health Physicist)	262-8769/0667	249-7825
A. Ben-Zikri (Health Physicist)	262-8769/0667	221-1681
S. Engelhardt (Health Physicist Supr.)	262-8769/0667	244-1811
R. Radtke (Safety Director)	262-8769/0667	873-9639

Police and Security 262-2957
(Call if you cannot reach Health Physics Staff)

<u>University Radiation Safety Committee Members</u>		
F. H. Attix (Prof. Human Oncology)	262-3527	273-0520
R. D. Bremel (Prof. Dairy Science)	263-5652	238-2746
P. M. DeLuca (Assoc. Prof., Radiology)	873-6651	274-1842
S. J. Engelhardt (Health Physicist Supr.)	262-8769/0667	244-1811
P. A. Helmke (Prof. Soils)	263-4947	835-7059
F. C. Larson, M.D. (Prof. Medicine)	263-7507	251-1392
D. L. Nelson (Prof. Ag & Lsc. Biochem)	263-6879	
R. E. Polcyn, M.D. (Prof. Human Oncology)	256-1901 Ext. 561	546-5891
R. R. Radtke (Safety Director)	262-8769/0667	873-9639
B. R. Thomadsen (Asst. Prof. Human Oncol)	263-8500	233-3438
J. W. Tracy (Asst. Prof. Vet Medicine)	263-8212/8735	263-5878
W. F. Vogelsang (Prof. Engineering)	262-3374	271-1417
E. Day Werts (Asst. Prof Hs-Med. Hu. Oncol)	263-3695/5349	231-3178

<u>Medical Center Radiation Safety Committee Members</u>		
S. J. Engelhardt (Health Physicist Supr.)	262-8769/0667	244-1811
M. Garvin (Hosp. Safety Dir.)	263-1512	
R. H. Laessig (Dir. State Lab of Hygiene)	262-1293	238-3034
F. C. Larson, M.D. (Prof. Medicine)	263-7507	251-1392
W. S. Mellon (Asst. Prof. of Pharmacy)	262-3196	274-6061
R. J. Nickles (Prof. Radiology)	263-4269	231-3391
E. D. Plotka (Marshfield Clinic)	(715)387-5104	
R. R. Radtke (Safety Director)	262-8769/06667	873-9639
E. E. Seavey (Assoc. Dir. Animal Care)	263-6465	833-2130
B. R. Thomadsen (Asst. Prof. Human Oncol.)	263-8500	233-3438
G. J. Weir, Jr. MD (Marshfield Clinic)	(715)387-7787	
A. L. Wiley (Prof. Human Oncology)	263-8500	
M. A. Wilson, MD (Asst. Prof, Radiology)	256-1901 ext. 562	
R. D. Woodson, MD (Prof. Medicine)	263-4916	233-8965
J. R. Cameron (Advisor to Committee)	262-9513	238-2544

<u>If Medical Attention is Needed</u>		
Dr. F. C. Larson	263-7507	251-1392
Dr. R. E. Polcyn	256-1901 ext. 561	546-5891
Dr. M. A. Wilson	256-1901 ext. 562	274-8342

<u>Reactor Labaoratory</u>		
R. Cashwell (Prog. Supr. Engr., Nuc. Eng.)	262-3392	831-6742
M. Jensen (Specialist, Nuc. Engr.)	262-3392	244-8545
D. Legare (Specialist, Nuc. Engr.)	262-3392	244-4265
S. Matusewic (Specialist, Nuc. Engr.)	262-3392	832-6264
W. Vogelsang (Professor, Engineering)	262-3374	271-1417