



University of Wisconsin-Madison

SAFETY IS OUR CONCERN...

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

MAY 18, 1984

Dr. Bruce Mallett
U. S. Nuclear Regulatory Commission
Material Licensing Branch
Division of Fuel Cycle and
Material Safety
799 Roosevelt Rd.
Glen Ellyn, Ill.

030-07109

Dear Dr. Mallett,

The University of Wisconsin-Madison wishes to request a renewal of license number 48-09843-28 for a Radiation Machinery Corporation Gammator-50B. Except as described below, licensed materials will be possessed and used in accordance with statements, representations and procedures contained in application dated March 15, 1979; and letter dated March 9, 1982. We want to make the following changes in license number 48-09843-28 and correspondence mentioned above.

1. License condition 14. D. should be changed to read "Tests for leakage and/or contamination shall be performed by G. M. Boush or members of the health physics staff or by other persons specifically authorized by the Commission or an agreement State to perform such services."
2. Item 12 of the application dated March 15, 1979 should be changed to read as follows. "TLD dosimeters are supplied by R. S. Landauer, Jr. and Company. The contract for dosimetry services is renewed biennially, so the vendor may change at that time. Body and/or extremity dosimeters are worn when required by 10 CFR Part 20 or University Regulations."
3. A new list of radiation detection instruments (attachment 10 in 1979 application) is included as attachment 1.

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4. The procedures for calibration of radiation detection instruments, attachment #11 in the original application, are superseded by attachment #11 included with this application.
5. In attachment 14, the word "enclosed" should be deleted from the second paragraph. In the third paragraph, the name Elsa Nimmo should be changed to Sue Engelhardt.

The list of emergency phone numbers in attachment 14 has been replaced by the list included in attachment 2 to this application.

If you need more information to process this application you can contact me at (608) 262-8769. Thank you for your prompt attention to this application.

Sincerely,

Sue Engelhardt

Sue Engelhardt
Radiation Safety Officer

Attachment #1

RADIATION DETECTION INSTRUMENTS

Please refer to the pages immediately following for a list of the radiation 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 will contain an area radiation monitor with an audible alarm. This area monitor will have sufficient sensitivity to detect radiation levels which would result if the source were partially or totally exposed.

ATTACHMENT #1

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 #1

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 ⁸ 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 ⁸ 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 mg/cm ²) 8121 A (20 mg/cm ²) 8120 A (2 mg/cm ²)			

ATTACHMENT 2

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	238-3846
D. Kaiser (Health Physicist)	262-8769/0667	271-1846
E. Boeldt (Health Physicist)	262-8769/0667	249-7825
A. Ben-Zikri (Health Physicist)	262-8769/0667	238-1663
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)

University Radiation Safety Committee Members

F. H. Attix (Prof. Human Oncology)	262-3527	273-0520
R. D. Bremel (Prof. Dairy Science)	263-5652	238-2746
R. H. Burris (Prof. Biochemistry)	262-3042	233-5932
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
L. Kahan (Prof., Physiolog. Chem.)	263-1864	238-4394
F. C. Larson, M.D. (Prof. Medicine)	263-7507	251-1392
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
W. F. Vogelsang (Prof. Engineering)	262-3374	271-1417

Medical Center Radiation Safety Committee Members

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)	262-8769/0667	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

If Medical Attention is Needed

Dr. F. C. Larson	263-7507	251-1392
Dr. R. E. Polcyn	256-1901 ext. 561	546-5891
Dr. J. C. Puletti	263-8500	233-5004
Dr. M. A. Wilson	256-1901 ext. 562	274-8342

Reactor Laboratory

R. Cashwell (Prog. Supr. Engr., Nuc. Engr.)	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

Attachment #11

Calibration of Instruments Listed in Item #10

Calibrations of the the health physics survey instruments are performed by the health physics staff using three different Cs-137 sources. One source is located at the Safety department and has a nominal activity of 1.0 Curie. The second and third Cs-137 sources available for use in calibration are contained in a J. L. Sheperd Model 78-2m dual-source irradiator. The nominal activities of these sources are 1.3 Curies and 130.0 Curies.

The dual-source irradiator has an NBS tracable calibration from J. L. Sheperd and this calibration has been checked by use of a number of NBS calibrated ion chambers. The activity of the source located at the Safety Department has been recently verified by intercomparison with the J. L. Sheperd sources using a 100cc ion chamber. Decay correction for the Cs-137 source will be performed at least semi-annually.

The source located at the Safety Department has a range of exposure rates of 0.07 mR/hr to 264 mR/hr through the use of distance and attenuators offering transmission factors of 0.001 to 1.0. The J.L. Sheperd irradiator has exposure rates ranging from 11.0 mR/hr to 316.0 R/hr, through the use of the two sources and distance.

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

The health physics instruments will be calibrated at least annually. The area monitor for this installation will be tested for correct reponse semi-annually, using an appropriate check source.