14

NOV 17 1993

MEMORANDUM FOR: John H. Austin, Chief
Decommissioning and Regulatory
Issues Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

FROM: John E. Glenn, Chief
Medical, Academic, and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

SUBJECT: TECHNICAL ASSISTANCE REQUEST: MADIGAN ARMY MEDICAL CENTER; DISPOSAL OF BYPRODUCT MATERIAL AS ORDINARY TRASH PURSUANT TO 10 CFR 20.302.

We received the enclosed Technical Assistance Request (TAR) from Region V dated September 13, 1993, wherein, Madigan Army Medical Center requested authorization to dispose of byproduct material as ordinary trash pursuant to 10 CFR 20.302.

Along with byproduct material with half-lives less than 120 days (i.e., Tin (Sn-113), Cerium (Ce-141), and Sulfur (S-35)), the licensee is seeking to dispose of Gadolinium (Gd-153) as ordinary trash. Gadolinium-153 has a half-life of 241 days, an annual intake limit of 500 microcuries, and the licensee possesses less than 0.5 microcurie.

We request your review of the Gd-153 disposal issue. We are prepared to instruct Region V to approve decay-in-storage disposal for less than 120 days, but will await your conclusions. If you have any questions, please contact James Smith (301) 504-2613.

John E. Glenn, Chief
Medical, Academic, and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Enclosure: TAR dtd 9/13/93
DSTRIBUTION: IMNS 603

MShanbacky, RI*	RCaniano,RIII	JRicci, AEOD/TTC*	IMNS Central File	
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WBrach	*w/o encls.			

OFC	IMAB	E	IMAB	N	IMAB	E		
NAME	JSmith		LWCamper		JGLenn			
DATE	11/15/93		11/16/93		11/11/93			

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DFS-9 (Request Offices)
XL-4-1, Part 20 (Standards for Protection Against Radiation)

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We request your review of the Gd-153 disposal issue. We are prepared to instruct Region V to approve decay-in-storage disposal for less than 120 days, but will await your conclusions. If you have any questions, please contact James Smith (301) 504-2613.

John E. Glenn, Chief
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Use Safety Branch
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Medical Nuclear Safety, NMSS

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NAME	JSmith		LWCamper		JGLenn			
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V

1450 MARIA LANE
WALNUT CREEK, CALIFORNIA 94596-5368

SEP 1 3 1993

MEMORANDUM FOR: John E. Glenn, Chief
Medical, Academic, and Commercial Use Safety Branch
NMSS

FROM: Gregory P. Yuhas, Chief
Radioactive Materials Safety Branch

SUBJECT: REQUEST FOR TECHNICAL ASSISTANCE (TAR)

Enclosed is a TAR for the Madigan Army Medical Center in Tacoma, Washington. The licensee is requesting a 10 CFR 20.302/2002 authorization to dispose of old animal carcasses containing licensed material > 65 day half life.

If we can provide additional information or assistance please contact Jim Montgomery of my staff at 510-975-0249.

Sincerely,

G.P. Yuhas

Gregory P. Yuhas, Chief
Radioactive Materials Safety Branch

Enclosure

REQUEST FOR TECHNICAL ASSISTANCE

Date: Sept. 13, 1993

TO: John E. Glenn, Chief, Medical, Academic, and Commercial Use Safety Branch, NMSS

FROM: Gregory P. Yuhas, Chief, Radioactive Materials Safety Branch, Region V

LICENSEE: Madigan Army Medical Center LICENSE NO.: 46-02645-03

571833 Control No. X (enclosed)

8/13/93 Letter dated X (enclosed)

X Suggested change in licensing procedure (enclosed)

____ Other (see remarks) Copy of current license + waste disposal procedures enclosed.

Problem/Issue: licensee has been storing licensed material w/ half-lives > 65 days [i.e. ^{153}Gd (242 days); ^{113}Sn (115 days) $\times$ ^{35}S (88 days)] and now wishes to dispose of waste to normal, non-radioactive trash.

Action Required: Approve disposal as requested. Licensee has also surveyed waste w/ no interposed shielding w/ a Victoreen model 450 P micro-R meter. All readings indistinguishable from natural background.

Alternatives Considered: Dispose of as low level radioactive waste.

Regardless of disposal method, licensee will be required to comply w/ EPA RCRA.

Recommended Alternative: animal carcasses from the Farm

Remarks: licensee is not authorized by license condition to dispose of < 65 day half life RAM for decay but the activity is described in the 1993 license renewal application which is referenced on the

Regional Reviewer: Jim Montgomery
Reviewer Code: W5
Reviewer Phone No.: 510-975-0249

DEPARTMENT OF THE ARM
MADIGAN ARMY MEDICAL CENTER
TACOMA, WASHINGTON 98431-5000

REPLY TO
ATTENTION OF

RADIATION PROTECTION OFFICE

13 AUG 1993

U.S. Nuclear Regulatory Commission
Region V, Materials Radiation Protection Section
1450 Maria Lane, Suite 210
Walnut Creek, California 94569

Gentlemen:

1. Request authority to dispose of medical research waste. The following is provided per 10 CFR 20.2002.

a. Original activity was 500 micro curies each of ^{153}Gd, ^{141}Ce and ^{113}Sn assayed on 6 March 1987. Original activity of the ^{35}S was 10 millicuries and was last placed in storage in September 1989. Description of waste: research laboratory pig and rabbit carcasses and parts, paper, glass, metal and vials containing the licensed materials (^{153}Gd, ^{113}Sn, ^{141}Ce, ^{35}S) referenced in the attached protocols. All waste materials are presently contained in laboratory storage medium (Formalin) and identified as log numbers 87-25, 87-26, 87-27, 87-28, 87-29, 87-30, 87-31A, drum 1, 2, 3, and 4 in the radioactive waste disposal log.

b. On October 18, 1993 the ^{153}Gd waste will have attained its 10th half life. The medical waste storage medium (Formalin) will be disposed of in accordance with applicable RCRA regulations as a hazardous waste.

c. No other licensed or unlicensed facility under this command will be affected. The waste and Formalin will be disposed of in accordance with applicable RCRA disposal methods.

d. Through radioactive decay, the longest lived licensed material (^{153}Gd) will have past the 10th half life in October 1993. ALARA procedures have been maintained throughout the materials 10 half-lives. Materials will be handled and disposed of under NRC and hazardous waste guidelines.

Point of contact regarding this action should be addressed to Commander, Madigan Army Medical Center, ATTN: HSHJ-PVR (Radiation Protection Officer), Tacoma, WA 98431-5000, commercial phone (206) 967-6696 or 4050, FTS 397-6696 or 4050.

Sincerely,

Wesley S. Hohl
Lieutenant Colonel, U.S. Army
Executive Officer

Enclosure

MATERIALS LICENSE

Amendment No. 49

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Department of the Army Madigan Army Medical Center Preventive Medicine Service 2. (Radiation Protection Office) Tacoma, Washington 98431-5000	In accordance with letter dated December 21, 1992 3. License number 46-02645-03 is amended in its entirety to read as follows:
	4. Expiration date October 31, 1994
	5. Docket or Reference No. 030-03368

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Any byproduct material identified in 10 CFR 35.100	A. Any radiopharmaceutical identified in 10 CFR 35.100	A. As needed
B. Any byproduct material identified in 10 CFR 35.200	B. Any radiopharmaceutical identified in 10 CFR 35.200	B. As needed
C. Any byproduct material identified in 10 CFR 35.300	C. Any radiopharmaceutical identified in 10 CFR 35.300	C. 3.0 curies
D. Any byproduct material identified in 10 CFR 35.400 with a half-life less than or equal to 120 days	D. Any brachytherapy source identified in 10 CFR 35.400	D. As needed
E. Cesium 137	E. Brachytherapy sources identified in 10 CFR 35.400	E. 500 curies
F. Cobalt 60	F. Brachytheraphy sources identified in 10 CFR 35.400	F. 500 curies

230040

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number: 46-02645-03

Docket or Reference number: 030-03368

Amendment No. 49

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
G. Strontium 90	G. Brachytheraphy sources identified in 10 CFR 35.400	G. 10 curies
H. Any byproduct material identified in 10 CFR 35.500 with a half-life less than or equal to 120 days	H. Sealed sources for diagnostic devices	H. As needed
I. Americium 241	I. Sealed sources for diagnostic devices	I. 10 curies
J. Gadolinium 153	J. Sealed sources for diagnostic devices	J. 500 curies
K. Hydrogen 3	K. Any	K. 100 millicuries
L. Any byproduct material with Atomic Nos. 2 through 83, inclusive, with a half-life less than or equal to 120 days	L. Any	L. 25 millicuries of each
M. Calcium 45	M. Any	M. 1.0 millicurie
N. Carbon 14	N. Any	N. 10.0 millicuries
O. Chlorine 36	O. Any	O. 1.0 millicurie
P. Iodine 129	P. Any	P. 20 microcuries
Q. Iron 55	Q. Any	Q. 5.0 millicuries
R. Manganese 54	R. Any	R. 0.5 millicurie
S. Zinc 65	S. Any	S. 0.5 millicurie
T. Any byproduct material with Atomic Nos. 1 through 83, inclusive	T. Sealed sources	T. Not to exceed 700 millicuries total

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
U. Nickel 63	U. Foil	U. 100 millicuries
V. Depleted uranium	V. Shielding	V. 999 kilograms

9. Authorized Use

A. Medical use described in 10 CFR 35.100.
B. Medical use described in 10 CFR 35.200.
C. Medical use described in 10 CFR 35.300.
D. through G. Medical use described in 10 CFR 35.400.
H. through G. Medical use described in 10 CFR 35.500.
K., L., and M. through S. Research in laboratory animals.
A. through C., and K. through S. Compounding and manufacturing of radiopharmaceuticals for in vivo and in vitro use, provided that such radiopharmaceuticals for in vivo use shall be subject to the Food and Drug Administration's requirements fc New Drug Applications (NDA's) and Investigational Nev Drugs (IND's), and research in humans as approved by Radioactive Drug Research Committee (RDRC) approved l the FDA.
T. Reference/calibration standards.
U. For use in gas chromatographs for sample analysis.
V. As shielding for linear accelerators, molybdenum-99/technetium-99 generators, or i shielding blocks to be used in selected radiation therapy procedures.

CONDITIONS

10. Location of use: Madigan Army Medical Center, Tacoma, Washington

11. A. Radiation Protection Officer: Captain Ricky J. Kammerer

B. In the absence of Captain Ricky J. Kammerer, the Acting Radiation Protectic Officer is William P. Menzel.

12. A. The use of licensed material in or on humans shall be by a physician as defined in 10 CFR 35.2.

B. Physicians designated to use licensed material in or on humans shall meet training criteria established in Subpart J and shall be designated by the Radiation Safety Committee. The licensee shall maintain records of individuals designated as users.

CONDITIONS

(continued)

C. Licensed material for other than human use shall be used by, or under the supervision of, individuals designated by the Radiation Safety Committee. The licensee shall maintain records of individuals designated as users.

13. Sealed sources for a use other than medical use shall be tested in accordance with 10 CFR 35.59.

14. Except for sources identified in 10 CFR 35.59(g), the licensee shall conduct a physical inventory every three (3) months to account for all sealed sources and/or devices received and possessed under the license. Records of the inventories shall be maintained for two (2) years from the date of each inventory.

15. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in 10 CFR 20.203(a)(1), the licensee is hereby authorized to label detector cells and cell baths, containing licensed material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols without a color requirement.

16. Notwithstanding the requirements of 10 CFR 35.49(a) and (b), the licensee may use for medical use any byproduct material or reagent kit for which the Food and Drug Administration has accepted a "Notice of Claimed Investigational Exemption for a New Drug" (IND) or approved a "New Drug Application" (NDA).

17. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material".

18. The licensee shall maintain records of information related to decommissioning at the Madigan Army Medical Center, Preventative Medicine Service (Radiation Protection Office), Tacoma, Washington per the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.

19. A. Sealed sources containing licensed material shall not be opened.

B. Detector cells containing licensed material shall not be opened or the sources removed from the detector cell by the licensee.

NRC Form 374A (5-84) U.S. NUCLEAR REGULATORY COMMISSION

PAGE 3 OF 3 PAGES

License n 46-02645-03

Docket or Reference number 030-03368

Amendment No. 49

MATERIALS LICENSE
SUPPLEMENTARY SHEET

CONDITIONS

(continued)

20. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Application dated July 10, 1989
B. Letter dated October 23, 1989
C. Letter dated May 11, 1990
D. Letter dated May 22, 1991
E. Letter dated October 1, 1991
F. Letter dated January 8, 1992
G. Letter received August 24, 1992
H. Telefacsimile dated September 9, 1992
I. Letter dated December 21, 1992
J. Letter dated January 15, 1993

FOR THE NUCLEAR REGULATORY COMMISSION

Date JAN 25 1993

By: Beth A. Prange
Beth A. Prange
Sr. Health Physicist (Licensing)
Radioactive Materials Safety Branch
Region V

ATT 11.1

DISPOSAL PROCEDURE OF LICENSED RADIOACTIVE MATERIALS

1. General.

a. All radioactive labels will be defaced or removed from containers and packages prior to disposal in in-house general or infectious waste channels.

b. Medical center radiation workers are reminded at least during their annual radiation protection refresher training to segregate nonradioactive waste, such as leftover reagents, boxes, and packing material from radioactive waste.

c. Radioactive waste generating activities of this medical center will occasionally be monitored to ensure that radioactive waste, both in amount and volume, is not created unnecessarily and that radioactive waste is handled in a manner consistent with the radioactive waste handling procedures established by this attachment for licensed radioactive material.

2. Disposal of Licensed Radioactive Liquids and Gases.

a. Licensed radioactive liquids, when readily soluble or dispersible in water, will be disposed of into the sanitary sewage system in accordance with the requirements of 10 CFR 20.303. Past operating records indicate that this medical center disposes annually into the sanitary sewage system millicurie amounts of licensed radioactive material.

b. Liquid scintillation counting media containing either Carbon-14 or Hydrogen-3 at concentration levels below 0.05 microcuries per gram will be burned in the post high-temperature incinerator without regard to its radioactivity per 10 CFR 20.306.

c. This medical center will not directly vent spent aerosols and gases to the atmosphere per ATT 10.13, Item 10.13.3 and will ensure any release incident to a research procedure is below the airborne concentration levels found in 20.103 and 20.106.

3. Decay-In-Storage (DIS)

a. Short-lived licensed radioactive material of physical half-life less than 65 days will be decayed-in-storage. This medical center will maintain a sufficient number of barrels to accomodate all such waste and will maintain this waste under direct Radiation Protection Office (RPO) control while in DIS. Waste held in DIS will be held for at least 10 half-lives of radioactive decay.

b. Prior to final disposal of such wastes, a thin-end-window GM survey meter with either an open window or pancake probe will be checked for proper operation with a radioactive check source and then used to monitor each plastic waste bag from the barrel concerned in a low-background, i.e. less than 0.05 mR/hr or equivalent cpm area. Waste bags whose exterior surface radiation exposure rate in mR/hr or cpm show radiation levels indistinguishable from background will be burned in the post high-temperature incinerator with an appropriate logbook kept as to initial transfer to DIS date, disposal date, and type of material by original isotope.

c. This medical center presently uses depleted uranium-shielded Molybdenum-99/Technetium-99m generators. These generators are not dismantled by this medical center. When a new generator arrives, a spent generator at least 22 days old is direct-exchanged. At this 22-day point, such generators typically contain about 22 millicuries of Molybdenum-99. These generators are direct-exchanged in the same DOT 7A shipping container in which they arrived and are labelled with a "Yellow II" shipping label and swiped to ensure that any removable contamination is less than 2,200 dpm/100 cm^2. The radiation exposure rate at the container surface and at one meter are also measured and logged. Each generator is logged as to its initial arrival date, direct-exchange date, and swipe test and exposure rate results. This disposal system is done in accordance with the manufacturer's instructions who is also licensed by the NRC, Medi + Physics, Inc.

d. In the event licensed waste is generated with a half-life greater than 65 days, such waste would be accumulated until an economically disposable volume had accumulated. At this

point, the waste would be shipped to an authorized land burial site. Such a shipment would be coorindated through Army channels. The U.S. Army Munitions and Chemical Command, Rock Island, IL is the Army coordinator for the shipment of long-lived radioactive waste to authorized burial sites. It is conceivable that a small volume of long-lived radioactive waste may accumulate in the future, such as decayed Cesium-137 brachytherapy capsules or depleted non-NRC-Regulated Cobalt-57 flood sources. Under present guidelines, such wastes would have to be accumulated until at least of few barrels of such waste were could be made available for shipment since most carriers do not choose to pick up just one or two barrels.

e. This medical center uses radioactive material for in-vitro testing in the RIA Lab of the Nuclear Medicine Clinic. This medical center, however, no longer uses BACTEC test kits containing radioactive material within the Department of Pathology. If in the future, use of such kits was reinstituted, then such kits would be disposed of without regard to their radioactivity as hospital infectious waste.