

MATERIALS LICENSE

Amendment No. 12

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, 36, 39, 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.

301093

Licensee

In accordance with letter dated
September 20, 1996

1. Derse and Schroeder Associates, Ltd.

3. License Number 48-20213-01 is amended in
its entirety to read as follows:2. 1202 Ann Street
Madison, WI 53713

4. Expiration Date February 28, 2004

5. Docket or
Reference No. 030-181046. Byproduct, Source, and/or
Special Nuclear Material7. Chemical and/or Physical
Form8. Maximum Amount that Licensee
May Possess at Any One Time
Under This License

A. Hydrogen-3

A. Any

A. 245 millicuries

B. Carbon-14

B. Any

B. 75 millicuries

C. Sulfur-35

C. Any

C. 20 millicuries

D. Phosphorus-32

D. Any

D. 20 millicuries

E. Phosphorus-33

E. Any

E. 20 millicuries

F. Iodine-125

F. any

F. 5 millicuries

G. Chromium-51

G. Any

G. 1 millicurie

9. Authorized Use:

A. through G. For research and development as defined in Section 30.4 of 10 CFR Part 30,
including animal studies.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at
1202 Ann Street, Madison, Wisconsin.11. A. Licensed material shall be used by, or under the supervision of,
Collin H. Schroeder, John Steele, or Richard J. Lechnir.

B. The Radiation Safety Officer for this license is Richard J. Lechnir.

12. Experimental animals, or the products from experimental animals, that have been
administered licensed materials shall not be used for human consumption.13. The licensee shall not use licensed material in field applications where activity is
released except as provided otherwise by specific condition of this license.9610280060 960924
PDR ADOCK 03018104
C PDRCOPY 230
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**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

48-20213-01

Docket or Reference Number

030-18104

Amendment No. 12

14. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.
15. The licensee is authorized to hold radioactive material with a physical half-life of less than 90 days for decay-in-storage before disposal in ordinary trash provided:
- A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.
 - B. Before disposal as ordinary trash, byproduct material shall be surveyed at the container surface with the appropriate survey meter set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
 - C. A record of each disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
16. Pursuant to 10 CFR 20.106(b) and 10 CFR 20.302, the licensee is authorized to dispose of licensed material by incineration provided the gaseous effluent from incineration does not exceed the limits specified for air in Appendix B, Table II, 10 CFR Part 20.
17. 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 U.S. 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 September 22, 1993; and
 - B. Letter dated January 10, 1994.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date 9/24/96

By

James Mullane
Nuclear Materials Licensing Branch, Region III

COPY

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 03620
STATUS CODE: 0
FEE CATEGORY: 3M
EXP. DATE: 19990228
FEE COMMENTS:
DECOM FIN ASSUR-READY

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED

APPLICANT/LICENSEE: DERSE & SCHROEDER ASSOCIATES, LTD.
RECEIVED DATE: 960319
DOCKET NO: 3018104
CONTROL NO.: 301093
LICENSE NO.: 48-20213-01
ACTION TYPE: AMENDMENT

2. FEE ATTACHED

AMOUNT: 610
CHECK NO.: 7536

3. COMMENTS

SIGNED
DATE

D. Hersey
3-20-96

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED) ✓

1. FEE CATEGORY AND AMOUNT: 3M \$590

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:

AMENDMENT ✓
RENEWAL
LICENSE

3. OTHER

SIGNED
DATE

SC March 22, 1996

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APR 02 1996

REGION III

Log	Mar 12 1996
Remitter	
Check No.	7536
Amount	\$610 (\$590) Refund \$20
Fee Category	3M
Type of Fee	AMT
Date Check Rec'd	3/22/96
Date Completed	
By:	SC

DERSE & SCHROEDER ASSOCIATES, LTD.
DEVELOPMENTAL SCIENCE

PHILIP H. DERSE
COLLIN H. SCHROEDER

1202 ANN STREET
MADISON, WISCONSIN 53713
(608) 251-3005 • FAX (608) 251-3007

March 18, 1996

Mr. John Madera
Chief, Materials Licensing Branch
U. S. Nuclear Regulatory Commission
Region III
801 Warrensville Rd.
Lisle, IL 60532-4351

Re: Amendment to Derse & Schroeder NRC license # 48-20213-01

Dear Mr. Madera:

We wish to amend our U.S. Nuclear Regulatory Commission license, #48-20213-01, as follows:

- (1) Remove the following names from our list of individuals responsible for the radiation safety program after the new licenses have been granted for Kendrick Laboratories, Metabolic Analysis, and Epicentre Technologies. Applications for these licenses have been made.

John Noonan
Mary Schmidt

Jerry Jendrisak
Nancy Kendrick

- (2) Allow Derse & Schroeder to incinerate radioisotope-contaminated laboratory waste for other NRC licensees within our building, specifically, Kendrick Laboratories, Metabolic Analysis, and Epicentre Technologies, when their individual NRC licenses have been granted.

Derse & Schroeder manages the laboratory building at 1202 Ann St., Madison, WI which is owned by the building tenants under the corporation "Laboratory Associated Businesses, Ltd". Derse & Schroeder, Kendrick, Metabolic, and Epicentre are tenants and shareholders in the facility.

Derse and Schroeder is presently permitted to incinerate radioisotope contaminated waste (C-14, 400 uCi/day; H-3, 1000 uCi/day; S-35, 45 uCi/day) under the Derse & Schroeder NRC license. We do not wish to change our present incineration conditions, only to be allowed to incinerate the waste from those other licensees within the building. We do not wish to be in the disposal business, we only wish to facilitate radioisotope disposal for the above named tenants in an economical and safe manner.

We believe the following reasons make granting this amendment the best way to handle disposal of radioactive waste from our facility:

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MAR 19 1996

REGION III

301093

Derse & Schroeder Assoc., Ltd.

March 18, 1996

page 2

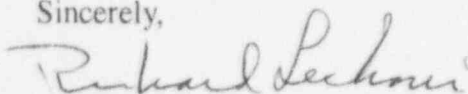
- A. Our present license which includes Derse & Schroeder "standard operating procedures" speaks in detail to the safe handling and incineration of radioisotope-contaminated waste. We keep detailed records of each incineration and have safely conducted incineration disposal since 1985. Derse & Schroeder is responsible for monitoring the ash before removal from the incinerator and safe disposal of that ash. Derse & Schroeder will continue that responsibility.
- B. Our incinerator operator is given a yearly safety refresher and is closely supervised by the radiation safety officer.
- C. We have no difficulty staying within our permitted incineration limits. Historically, the average amount of radioisotope-contaminated waste incinerated per year and the maximum incinerated in any one year over the last three years are in the following table. These figures include radioisotope-contaminated waste for the entire facility.

	<u>C-14(uCi)</u>	<u>H-3(uCi)</u>	<u>S-35(uCi)</u>
yearly average	1391	117	283
yearly maximum	1593	224	461
allowed by license	104,000	260,000	11,700

- D. The aforementioned building tenants are very small businesses. Incineration would make it unnecessary for them to accumulate and store waste for many months while awaiting landfill disposal. Although the amounts (uCi) incinerated are quite small, the waste represents a considerable amount of bulk and landfill disposal would be very expensive. The economies of incineration will help these small companies remain in business.

Thank you for your consideration of these amendment requests. Enclosed please find our check in the amount of \$610, the fee for this action.

Sincerely,



Richard Lechnir
Radiation Safety Officer

**DIVISION OF ACCOUNTING AND FINANCE
REQUEST FOR REFUND TO EMPLOYEE/VENDOR**

THE EMPLOYEE/VENDOR IDENTIFIED BELOW HAS OVERPAID THE NUCLEAR REGULATORY
COMMISSION FOR GOODS AND/OR SERVICES PROVIDED AND IS DUE A REFUND

EMPLOYEE/VENDOR/PAYEE CODE: _____

NAME: H. Derse & Schroeder Associates, LTD

ADDRESS: Attn: Philip H. Derse

ADDRESS: 1202 Ann Street

CITY: Madison STATE: WI ZIP: 53713

TRANS CODE: PX

TRANS TYPE: FE FUND: X5280 JOB CODE: _____ AMOUNT: \$20⁰⁰

TRANS TYPE: IR FUND: R1435 JOB CODE: INTR AMOUNT: _____

TRANS TYPE: IR FUND: R1099 JOB CODE: ADCH AMOUNT: _____

TRANS TYPE: IR FUND: R1099 JOB CODE: FINE AMOUNT: _____

TOTAL REFUND AMOUNT: \$20⁰⁰

COMMENTS: Lic 48-20213-01/CK 7536/RND 3/18/96/Reg

(limit comments to 40 characters, including spaces)

PREPARED BY: Shirley Crutchfield DATE: March 26, 1996

AUTHORIZED BY: Sanford Kimbrough DATE: 3/27/96

ORIGINAL INV. NO: _____ DATE PAID: _____ AMOUNT: _____

REFUND ENTERED INTO COLLECT BY: _____

REFUND DETERMINED BY: _____ DATE: _____

PLEASE ATTACH APPROPRIATE SUPPORTING DOCUMENTATION

Mar 12 III
3M 8590 AND
301093

OCT 10 1996

Richard J. Lechnir
Radiation Safety Officer
Derse & Schroeder Associates, Ltd.
1202 Ann Street
Madison, WI 53713

Dear Mr. Lechnir:

Enclosed is Amendment No. 12 to your NRC Material License No. 48-20213-01 in accordance with your request.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region III office at (630) 829-9887 so that we can provide appropriate corrections and answers.

Please be advised that your license expires at the end of the day, in the month, and year stated in the license. Unless your license has been terminated, you must conduct your program involving byproduct materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Notify NRC, in writing, within 30 days:
 - a. When the Radiation Safety Officer permanently discontinues performance of duties under the license or has a name change; or
 - b. When the licensee's mailing address changes (no fee is required if the location of byproduct material remains the same).
3. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license when you decide to terminate all activities involving materials authorized under the license.
4. Request and obtain a license amendment before you:
 - a. Change Radiation Safety Officers;

301093

- b. Order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;
 - c. Add or change the areas of use or address or addresses of use identified in the license application or on the license; or
 - d. Change ownership of your organization.
5. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

In addition, please note that NRC Form 313 requires the applicant, by his/her signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation, or imposition of a civil penalty, or an order suspending, modifying or revoking your license as specified in the General Policy and Procedures for NRC Enforcement Actions. Since serious consequences to employees and the public can result from failure to comply with NRC requirements, prompt and vigorous enforcement action will be taken when dealing with licensees who do not achieve the necessary meticulous attention to detail and the high standard of compliance which NRC expects of its licensees.

Sincerely,
Original Signed By
James R. Mullauer, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch

License No.: 48-20213-01

Docket No.: 030-18104

Enclosure: Amendment No. 12

DOCUMENT NAME: M:\03018104.CL6

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	DNMS/RIII								
NAME	JMULLAUER:jaw								
DATE	09/1/96								

OFFICIAL RECORD COPY

DERSE & SCHROEDER ASSOCIATES, LTD.
DEVELOPMENTAL SCIENCE

PHILIP H. DERSE
COLLIN H. SCHROEDER

1202 ANN STREET
MADISON, WISCONSIN 53713
(608) 251-3005 • FAX (608) 251-3007

September 20, 1996

Mr. James Mullauer
Materials Licensing Branch
U. S. Nuclear Regulatory Commission
Region III
801 Warrensville Rd.
Lisle, IL 60532-4351

Re: Amendment to Derse & Schroeder NRC license # 48-20213-01
dated March 18, 1996

Dear Mr. Mullauer:

We wish to rescind part (2) of the above amendment request that would allow us to incinerate radioisotope-contaminated waste for other NRC licensees. However, we wish to continue operation as stated under our present license which allows us to incinerate our own radio-waste.

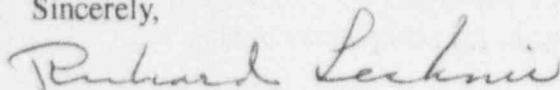
Part (1) of the above amendment which removes the following names from our license should remain in effect:

John Noonan
Mary Schmidt

Jerry Jendrisak
Nancy Kendrick

In addition, Robert Smith and Steven Vielhuber should also be removed from our license. They are no longer employed here as indicated in previous informational letters.

Sincerely,



Richard Lechnir
Radiation Safety Officer

RECEIVED
SEP 26 1996
REGION III
SEP 26 1996



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

August 29, 1996

96-37

MEMORANDUM TO: John R. Madera, Chief
Nuclear Materials licensing Branch
Division of Nuclear Material Safety, RIII

FROM: Josephine Piccone, Branch Chief *Josephine M. Piccone*
Operations Branch
Division of Industrial and
Medical Nuclear Safety, NMS8

SUBJECT: REQUEST BY DERSE & SCHROEDER ASSOCIATES TO INCINERATE
LICENSED MATERIAL AS A SERVICE TO OTHER LICENSEES

I am responding to your TAR dated April 15, 1996 (attached), regarding the request by Derse & Schroeder, an NRC licensee, to incinerate licensed material present in wastes generated by other licensees. According to the licensee's letter to you dated March 18, 1996, the licensed material in question would be received from three other licensees that occupy the same building as Derse & Schroeder, namely Kendrick Laboratories, Metabolic Analysis, and Epicenter Technologies.

The total amount of licensed material to be transferred by these three licensees to Derse & Schroeder for incineration is about 2 mCi per year, and would include H-3, C-14, and S-35. Derse & Schroeder is currently authorized to incinerate their own waste, and their current incineration rates do not exceed 0.22 mCi/yr H-3, 1.6 mCi/yr C-14, and 0.46 mCi/yr S-35, for a total of about 2.3 mCi/yr. This incineration level is substantially below that permitted by their NRC license, which restricts the rate of incineration to a level that would not cause concentrations in the gaseous effluents to exceed the concentrations listed in 10 CFR Part 20, Appendix B, Table 2.

We have reviewed the licensee's request and have concluded that although addition of the wastes from the three licensees noted above would double the current rate of incineration of licensed material, the incineration operation would still be operating well within the restrictions imposed by License Condition 16 in the Derse and Schroeder license. The licensee may therefore be permitted to incinerate the additional wastes. However, receiving the wastes from the three licensees is not permitted by NRC regulations without specific authorization. According to 10 CFR 20.2001(b)(2),

A person must be specifically licensed to receive waste containing licensed material from other persons for treatment or disposal by incineration.

Contact: Sami Sherbini
(301) 415-7902

SEP 06 1996

This restriction is not contingent on whether or not this activity is conducted for financial or other gain. We therefore, recommend that Derse & Schroeder's license be amended to permit them to receive wastes from the three licensees named above for the purpose of disposal by incineration. However, we would also suggest that you inform the licensee that such an amendment would result in their assignment to a different program code, and would move them to a different fee category. The outcome would be higher fees for the licensee, possibly significantly higher than their current fees.

We have also considered your questions and concerns regarding implementation of the guidance in P&GD 8.10, Guidance on Disposal of Ash as Ordinary Waste. In a memorandum dated March 15, 1996, from the Director, Division of Nuclear Materials Safety, RIII, you expressed concern regarding the effects of the reduced concentrations for some of the radionuclides that may be disposed of in incinerator ash, particularly H-3 and C-14. Your concern was that the new concentrations are so low that they may pose serious detection problems for licensees attempting to show compliance with the new limits. You also recommended that NRC provide licensees with guidance on acceptable methods for showing compliance, including alternatives to measuring the ash concentrations. These questions are being discussed with the Division of Waste Management, and we anticipate that a position will be formulated by the end of December, 1996. We will inform you of that position as soon it is adopted.

Please call the technical contact if you need additional information.

Attachment: As stated



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION III
301 WARRENVILLE ROAD
LISLE, ILLINOIS 60632-4351

APR 26 1996

REGIONAL TECHNICAL ASSISTANCE REQUEST FORM

Date: April 15, 1996

Don Cool (DAC), Mail Stop: 6H3-OWFN, Division of Industrial and Medical
Nuclear Safety, NMSS

From: John R. Madera, Region III, Chief, Nuclear Materials Licensing Branch

Request for incineration as a service to other licensees (Derse & Schroeder
Associates, LTD. License No. 48-20213-01)

☐ Control No. 301093

☐ Letter dated: March 18, 1996 (enclosed)

Problem/Issue: Attached is the licensee's request to incinerate waste for other licensees. The licensee has a limited R&D program and is currently authorized to incinerate radioactive waste in accordance with license Condition No. 16. The licensee is requesting authorization to incinerate radioactive waste for three other licensees who happen to occupy the same building as Derse & Schroeder. The three other licensees are limited R & D Labs. Incineration would include less than 2 millicuries total per year which would include Carbon-14, Tritium and Sulfur-35. The authorization would be limited to these other three licensees only.

☐ Action Required: Please provide guidance how Region III should approach this request. It is unclear whether the existing license can be amended to authorize incineration service or if the licensee would need to apply for a separate service license. In a telephone conversation with the RSO for Derse & Schroeder, the reviewer learned that there would be a nominal fee assessed for the incinerator operators time spent incinerating waste from the other 3 licensees. According to the RSO, this fee is a break even fee only and does not provide any profit as a result of the service.

Please also provide guidance how Region III should implement PG 8-10 dated February 7, 1996, (enclosed). Since the licensee is already authorized to incinerate radioactive waste, do we need to address the issues in PG 8-10 at this time or should that be addressed during the next license renewal.

☐ Recommended Action (with revisions): N/A Approve or ☐ Reject

Approved

D. Cool

-2-

APR 26 1996

It appears that the licensee is willing to perform the incineration service as a good fellowship gesture due to the proximity of the licensees (all being in one building), not as a commercial service. It is the opinion of Region III that the licensee may be authorized to perform this service as long as the service is not commercial. (Reference University of Wisconsin - Green Bay Wisconsin TAR No. 95-07, Control No. 397800 (enclosed))

Headquarters Reviewer: _____

Regional Reviewer: James R. Mullauer, M.H.S.

Reviewer Code: R4

Reviewer Phone No. (708) 301-9873 Fax No. (708) 515-1259

Request Needed by: June 7, 1996

Attachments: 1. License No. 48-20213-01
2. PG 8-10
3. TAR No. 95-07
4. Letter dated March 18, 1996

cc: C. Pederson

NRC REGION III OUTGOING TRANSMISSION REQUEST
 VERIFICATION NO. - FTS/COMMERCIAL (708) 790-5659

DATE: 5-15-96 NUMBER OF PAGES (INCLUDING COVER SHEET) 9
 TO (NAME): GEORGE PROCTOR
 FROM: Debbie Hersey (MATS SUPPORT)
 DESCRIPTION: TAR 96-37

RESIDENT INSPECTORS OFFICE		:	ONE WHITE FLINT	_____
BIG ROCK PT	_____ KEWAUNEE	:	PAYROLL	_____
BRAIDWOOD	_____ LASALLE	:	MNBB	_____
BYRON	_____ MONTICELLO	:	PHILLIPS BLDG	_____
CALLAWAY	_____ PALISADES	:	CHATTANOOGA TRAINING CENTER	_____
CLINTON	_____ PERRY	:	OPERATION CENTER	_____
D. C. COOK	_____ PT BEACH	:	CHAIRMAN'S OFFICE	_____
DAVIS-BESSE	_____ PR ISLAND	:	INSPECTOR GENERAL	_____
DRESDEN	_____ QUAD CITIES	:	WOODMONT BLDG	_____
DUANE ARNOLD	_____ ZION	:	REGION I _____ II _____ IV _____ V _____	_____
FERMI 2	_____	:		_____

OTHER (DESIGNATE - FAX NO.)

(301) 415-5369

PN'S		:	
CHAIRMAN'S OFFICE	_____ OP CENTER	:	OFFICE SERVICES SECTION USE ONLY
INSPECTOR GENERAL	_____ INFO	:	FTS
BYRDSONG NRR	_____ NSAC	:	COMMERCIAL
PAO HEADQUARTERS	_____ PDR	:	TIME STARTED
LICENSEE	_____	:	TIME COMPLETED
		:	OPERATOR

DERSE & SCHROEDER ASSOCIATES, LTD.

DEVELOPMENTAL AGENCY

PHILIP H. DERSE
COLLIN H. SCHROEDER1202 ANN STREET
MADISON, WISCONSIN 53713
(608) 251-3005 • FAX (608) 351-3001

March 18, 1996

A
0-30-15104

Mr. John Madera
Chief, Materials Licensing Branch
U. S. Nuclear Regulatory Commission
Region III
801 Warrensville Rd.
Lisle, IL 60532-1351

Re: Amendment to Derse & Schroeder NRC license # 48-20213-01

Dear Mr. Madera:

We wish to amend our U.S. Nuclear Regulatory Commission license, #48-20213-01, as follows:

- (1) Remove the following names from our list of individuals responsible for the radiation safety program after the new licenses have been granted for Kendrick Laboratories, Metabolic Analysis, and Epicentre Technologies. Applications for these licenses have been made.

John Noonan
Mary Schmidt

Jerry Jendrisak
Nancy Kendrick

- (2) Allow Derse & Schroeder to incinerate radioisotope-contaminated laboratory waste for other NRC licensees within our building, specifically, Kendrick Laboratories, Metabolic Analysis, and Epicentre Technologies, when their individual NRC licenses have been granted.

Derse & Schroeder manages the laboratory building at 1202 Ann St., Madison, WI which is owned by the building tenants under the corporation "Laboratory Associated Businesses, Ltd". Derse & Schroeder, Kendrick, Metabolic, and Epicentre are tenants and shareholders in the facility.

Derse and Schroeder is presently permitted to incinerate radioisotope contaminated waste (C-14, 400 uCi/day; H-3, 1000 uCi/day; S-35, 45 uCi/day) under the Derse & Schroeder NRC license. We do not wish to change our present incineration conditions, only to be allowed to incinerate the waste from those other licensees within the building. We do not wish to be in the disposal business, we only wish to facilitate radioisotope disposal for the above named tenants in an economical and safe manner.

We believe the following reasons make granting this amendment the best way to handle disposal of radioactive waste from our facility:

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MAR 19 1996

REGION III

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Derse & Schroeder Assoc., Ltd.

March 18, 1996

page 2

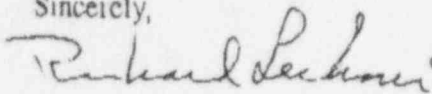
- A. Our present license which includes Derse & Schroeder "standard operating procedures" speaks in detail to the safe handling and incineration of radioisotope-contaminated waste. We keep detailed records of each incineration and have safely conducted incineration disposal since 1985. Derse & Schroeder is responsible for monitoring the ash before removal from the incinerator and safe disposal of that ash. Derse & Schroeder will continue that responsibility.
- B. Our incinerator operator is given a yearly safety refresher and is closely supervised by the radiation safety officer.
- C. We have no difficulty staying within our permitted incineration limits. Historically, the average amount of radioisotope-contaminated waste incinerated per year and the maximum incinerated in any one year over the last three years are in the following table. These figures include radioisotope-contaminated waste for the entire facility.

	<u>C-14(uCi)</u>	<u>H-3(uCi)</u>	<u>S-35(uCi)</u>
yearly average	1391	117	283
yearly maximum	1593	224	461
allowed by license	104,000	260,000	11,700

- D. The aforementioned building tenants are very small businesses. Incineration would make it unnecessary for them to accumulate and store waste for many months while awaiting landfill disposal. Although the amounts (uCi) incinerated are quite small, the waste represents a considerable amount of bulk and landfill disposal would be very expensive. The economies of incineration will help these small companies remain in business.

Thank you for your consideration of these amendment requests. Enclosed please find our check in the amount of \$610, the fee for this action.

Sincerely,



Richard Lechnir
Radiation Safety Officer

UNITED STATES
NUCLEAR REGULATORY COMMISSIONREGION III
991 VANDERBILT ROAD
Lisle, Illinois 60532-4351

March 15, 1996

MEMORANDUM TO: Donald A. Cool, Director
Division of Industrial and Medical Nuclear Safety, NMSS

FROM: *Cynthia D. Pederson*
Cynthia D. Pederson, Director
Division of Nuclear Materials Safety, RIII

SUBJECT: DRAFT POLICY AND GUIDANCE DIRECTIVE PG 8-10: GUIDANCE ON
DISPOSAL OF INCINERATOR ASH AS ORDINARY WASTE

This purpose of this memorandum is to provide comments on the subject draft Policy and Guidance Directive. Our comments, discussed in detail below, address the following issues: (1) acceptable procedures for sampling and analyzing ash; (2) acceptable methods for calculating radionuclide concentrations in ash, in lieu of sampling and analyzing; (3) demonstrating compliance; and (4) the new standard license condition.

The draft guidance limits the concentration of several radionuclides that may be disposed to a landfill to 10 percent of the value in Appendix B, Table 2, Column 2 for water. One of the radionuclides is carbon-14. Ten percent of the Part 20 limit for carbon-14 is $3\text{E-}6 \mu\text{Ci/g} = 3 \text{ pCi/g} = 7 \text{ dpm/g}$. Given this low threshold for disposing of ash containing carbon-14 and the difficulty most licensees will have in detecting these levels, we feel the guidance should include examples of acceptable procedures for sampling and analyzing ash, especially for the pure beta emitters, carbon-14 and hydrogen-3.

We are concerned that most licensees will not be able to demonstrate compliance by way of measuring the concentration of C-14 and H-3. As noted in your memo, an alternative to measuring the concentration would be performing a calculation in accordance with 20.1501(a)(2). The guidance should include methodology the NRC would accept. Also, clarification is requested on the term "average concentration." Specifically, is it acceptable for licensee's to combine non-radioactive and radioactive waste in order to lower the concentration to releasable limits?

Region III has implemented the new policy for one licensee. The licensee's waste disposal program authorizes them to incinerate up to $300 \mu\text{Ci}$ of C-14 waste per burn. Assuming 1% is retained in the ash (reference Health Physics 62(2) 183-5, 1992), they expect no more than $3 \mu\text{Ci}$ to remain in the ash. In order to achieve a concentration of 3 pCi/g , the licensee would have to burn a total of 166 grams, or 2200 pounds of waste. They average 20-30 pounds of

CONTACT: Kevin Null, RIII/DNMS
(708) 829 9854

Donald A. Coul

-2-

waste per 300 μ Cl of C-14 that is burned. The licensee stated it is no longer cost beneficial to incinerate radioactive waste contaminated with C-14. Mixing nonradioactive waste with radwaste may help achieve the low concentration; however, accumulating 2000 pounds of nonradioactive waste is costly and will require additional room for storage.

Our final comment pertains to the new standard license condition. The condition specifies release limits for all radionuclides, i.e., it combines those that can be released in accordance with Part 20, Appendix B, Table 2, Column 2 limits for water, and those that cannot exceed 10 percent of Appendix B, Table 2 values. Recently, we were instructed by NMSS not to modify standard license conditions. In this case, however, the Region believes it should be allowed to modify the condition to "fit" a particular licensee's situation. For example, the condition should be modified to reference only the radionuclide(s) a licensee is authorized to incinerate. Inclusion of additional radionuclides may be interpreted by some licensees that they can burn these materials as well.

cc: C. W. Hohl, RI
B. S. Mallett, RII
R. A. Scarano, RIV
S. A. Treby, OGC
G. C. Pangburn, NMSS
R. L. Baer, NMSS
M. V. Foderline, NMSS

DOCUMENT NAME: A:\AIT.ASH

To receive a copy of this document, indicate in the box "C" = Copy without attach/encl "E" = Copy with attach/encl "H" = No copy

OFFICE	RIII	C	RIII	C	RIII			
NAME	Nutt/ch:dp	N	Madera	for	Poderson	Foderline		
DATE	03/15/96		03/15/96		03/15/96			

OFFICIAL RECORD COPY



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001
April 13, 1995

95-07

MEMORANDUM TO: John R. Madera, Chief
Nuclear Materials Licensing Section
Division of Radiation Safety and Safeguards, RIII

FROM: Larry W. Camper, Chief *Larry W. Camper*
Medical, Academic, and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

SUBJECT: TECHNICAL ASSISTANCE REQUEST, DATED FEBRUARY 14, 1995,
REGARDING THE AMENDMENT REQUESTS FROM THE UNIVERSITY OF
WISCONSIN, GREEN BAY TO ALLOW KEWAUNEE NUCLEAR POWER TO
PERFORM THEIR SURVEY INSTRUMENT CALIBRATIONS (CONTROL
NO. 397800)

I am responding to your technical assistance request (TAR) (attached), dated February 14, 1995, regarding the amendment requests from the University of Wisconsin, Green Bay (UW-Green Bay) to allow Kewaunee Nuclear Power (KNP) to perform their survey instrument calibrations.

The TAR does not provide sufficient information regarding UW-Green Bay's survey instruments and license program to make a determination on the appropriateness of the KNP calibration procedure. The procedure provided appears to be very specific to two particular instruments, the PIC-6A and PIC-6B; therefore, it is assumed that the region will determine the sufficiency of the calibration procedure as it relates to UW-Green Bay. There are two issues that can be resolved at this point:

- 1) If the licensee chooses to have a contractor perform its instrument calibrations, does the contractor have to be licensed by the NRC to provide this service?

There is no requirement that an entity which provides a calibration service be licensed by the NRC to provide the service, the only limitation (e.g., 10 CFR 20.1501) is that the instruments be calibrated in accordance with the regulatory requirements for the licensee's uses, e.g., for a 10 CFR Part 35 licensee the survey instruments must be calibrated in accordance with 10 CFR 35.51. A service provider would only need to have an NRC license, if that provider would need to possess licensed material to perform the calibration. In this case KNP is already licensed to possess and use NRC licensed material for the purpose of calibrating survey instruments. The license does not specify that the instruments have to be possessed by KNP.

CONTACT: James A. Smith, NMSS
(301) 415-7904

APR 17 1995

John R. Madera

-2-

- 2) If KNP provides the service free of charge, is the service a commercial endeavor, and would a separate license be necessary to provide such a service?

According to the problem summary of the TAR, KNP will not be receiving a fee for this service; therefore, it would not be viewed as a commercial endeavor, and as such, KNP would not be required to obtain a separate materials license to perform these calibrations. If KNP does intend in the future to provide this service on a fee basis as a means of producing revenues separate from electric power generation, then a separate license would be necessary.

Attachment: RIII TAR dtd 2/14/95

FORM 374
J-89

U.S. NUCLEAR REGULATORY COMMISSION

PAGE 1 OF 2 PAGES

Amendment No. 11

MATERIALS LICENSE

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, 39, 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.

395787

Licensee

1. Derso and Schroeder Associates, Ltd.

2. 1202 Ann Street
Madison, WI 53713

In accordance with application dated
September 22, 1993
3. License number 48-20213-01 is renewed in
its entirety to read as follows:

4. Expiration date February 28, 1999

5. Docket or
Reference No. 030-18104

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. Hydrogen-3
- B. Carbon-14
- C. Sulfur-35
- D. Phosphorus-32
- E. Phosphorus-33
- F. Iodine-125
- G. Chromium-51

- A. Any
- B. Any
- C. Any
- D. Any
- E. Any
- F. Any
- G. Any

- A. 245 millicuries
- B. 75 millicuries
- C. 20 millicuries
- D. 20 millicuries
- E. 20 millicuries
- F. 5 millicuries
- G. 1 millicurie

9. Authorized Use:

A. through G. for research and development as defined in Section 30.4 of 10 CFR Part 30, including animal studies.

CONDITIONS

140103

10. Licensed material shall be used only at the licensee's facilities located at 1202 Ann Street, Madison, Wisconsin.

11. A. Licensed material shall be used by, or under the supervision of, Collin H. Schroeder, John Steele, Steven Vielhuber, Richard J. Lechnir, Nancy Kendrick, Mary Schmidt, Jerome Jindrisak, John Noonan, Robert E. Smith.

B. The Radiation Safety Officer for this license is Richard J. Lechnir.

12. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.

13. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.

7402170318 740202
PDR ADDCK 03018104
C PDR

C Form 374A

U.S. NUCLEAR REGULATORY COMMISSION

PAGE 2 OF 2 PAGES

MATERIALS LICENSE
SUPPLEMENTARY SHEETLicense number
48-20213-01Docket or Reference number
030-18104

Amendment No. 11

14. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.
15. The licensee is authorized to hold radioactive material with a physical half-life of less than 90 days for decay-in-storage before disposal in ordinary trash provided:
- A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.
 - B. Before disposal as ordinary trash, byproduct material shall be surveyed at the container surface with the appropriate survey meter set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
 - C. A record of each disposal permitted under this license condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
16. Pursuant to 10 CFR 20.106(b) and 10 CFR 20.302, the licensee is authorized to dispose of licensed material by incineration provided the gaseous effluent from incineration does not exceed the limits specified for air in Appendix B, Table II, 10 CFR Part 20.
17. 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 U.S. 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 September 22, 1993; and
 - B. Letter dated January 10, 1994.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date 2-2-94

By

Peter J. Liu
Materials Licensing Section, Region III

COPY



****Facsimile
Request****
Date:

August 1, 1996

Message For: Joseph Decicco

Of: NMSS

Facsimile Number: (301) 415-5369

Telephone Number: (301) 415-7833

Number of Pages (including this form): 12

From
James R. Mullauer, M.H.S.
Health Physicist
United States
Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Telephone Number: (708) 829-9873

Fax Number:

(708) 515-1259

January 10, 1994

Dr. Peter Lee
Region III Licensing Section
Division of Fuel Cycle and Material Safety
Nuclear Regulatory Commission
799 Roosevelt road
Glen Ellyn, IL 60137

Control No. 395787

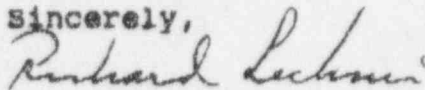
Additional information for renewal of license # 48-20213-01

Dear Dr. Lee:

Please find enclosed a modification of page 13 of our license renewal application as we discussed by phone. Item #5 on that page has been changed to read that no incinerator ash will be disposed to landfill unless no radioactivity can be detected.

Our SOP covering incineration, Radio. 4.3 "INCINERATION OF RADIOACTIVE WASTE" has been modified to reflect the above as well.

Sincerely,



Richard Lechnir
Radiation Protection Officer

Enclosures

RECEIVED

JAN 19 1994

REGION III

JAN 19 1994

(Jan 10, 1994 modification of license renewal application)

Calculations of airborne effluents, and Derse & Schroeder standard operating procedure, Radio. 4.3 "INCINERATION OF RADIOACTIVE WASTE" are found in the Waste Management Attachment, Item #11.

3. Determination of concentration of released airborne effluents

The released airborne effluents are dependent upon the amounts of radiolabeled waste incinerated. Those calculations have been made for the maximum allowable waste to be incinerated and are fractions of a percent of the allowable released airborne effluents.

4. Weekly and yearly maximum number of burns

Maximum time per burn - 2 hours

Weekly - 5 burns

Yearly - 260 burns

5. Method for monitoring ash for radioactivity

Whenever ash is to be removed from the incinerator after radioisotopes have been burned, the ash will be analyzed for radioactivity (by RPO or designee). Aliquots of ash will be suspended in liquid scintillation "cocktail" with sufficient water to form a homogeneous gel. Five such samples will be prepared and analyzed by liquid scintillation counting along with an ash "background" sample. If the counts per minute of the samples are no more than two times the background counts per minute, the ash will be considered to contain no detectable radioactivity. If the ash contains detectable radioactivity, it will be re-incinerated and retested. Ash, except for monitoring samples, will not be removed from the incinerator until it has been shown to contain no detectable radioactivity.

If radioactivity cannot be detected in the ash, it will be secured in plastic bags by the incinerator operator and be disposed in landfill by the municipal sanitation department.

Derse & Schroeder Associates, Ltd.
Madison, WI

TECHNICAL OPERATING PROCEDURE

Radio. 4.4
PAGE: 1 of 3
DATE: 1-10-94
REPLACES: Radio. 4.3
dated 9-16-93

TITLE: INCINERATION OF RADIOACTIVE WASTE

PRINCIPLE: Special precautions must be taken when incinerating radioactive wastes (^{35}S , ^{14}C , and ^3H) to ensure the safety of the incinerator operator and to prevent the issuance of radioactivity above the allowable levels into unrestricted areas.

PROCEDURE:

1. Before starting the incinerator, make sure a layer of ash covers the floor of the firebox to prevent molten glass from contacting the refractory.
2. Operate the incinerator according to the operation instructions posted in the incinerator room.
3. Wear disposable latex gloves when handling bags containing radioactive waste. When bag-handling has been completed, put the gloves in the incinerator. Do not leave radioactive waste outside unattended.
4. Check all packages and bags for leaks and proper labeling. Bags containing iodine-125, phosphorous-32, phosphorous-33, and chromium-51 may not be incinerated. Chlorinated materials, e.g. polyvinyl chloride gloves, may never be incinerated with aromatic solvents, e.g. toluene and scintillation "cocktail", regardless of incineration conditions. Chlorinated materials may be incinerated at or above 1800°F , however the use of chlorinated materials with radioisotopes is specifically prohibited in this facility by authority of standard operating procedures.

Derse & Schroeder Assoc. Ltd.
Madison, Wis.

Radio. 4.4
PAGE: 2 of 3
DATE: 1-10-94
REPLACES: Radio. 4.3
dated 9-16-93

4.1. If evidence of leaks exists, or if bags contain isotopes that may not be incinerated, contact the Radiation Protection Officer (RPO) for monitoring of possible contamination and disposal. Leaky packages should be handled minimally prior to clearance by the RPO.

4.2. The label will state the isotope and quantity of radioactivity contained. Make sure all packages of waste contaminated with one isotope contain less than:

400 uCi Carbon-14 or
1000 uCi Hydrogen-3 or
45 uCi Sulfur-35

and all packages having mixed isotopes contain less than:

200 uCi Carbon-14 and
500 uCi Hydrogen-3 and
45 uCi Sulfur-35

Notify the RPO if any package labels are above these limits. These limits are also for one day's incineration regardless of the number of bags burned.

5. Log the identity of the isotope, description of material, the quantity of radioactivity, and incineration time in the "Radioisotope Disposal" logbook or transfer the information to the RPO.

Derse & Schroeder Assoc. Ltd.
Madison, Wis.

Radio. 4.4
PAGE: 3 of 3
DATE: 1-10-94
REPLACES: Radio. 4.3
dated 9-16-93

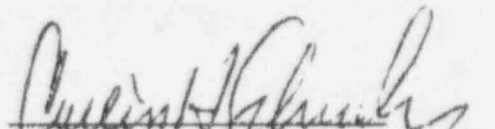
6. Ash removal

Before removing ash from the incinerator, notify the RPO or his designee of this action. The RPO or his designee will test ash samples for radioactivity before ash removal. Details of ash monitoring can be found in the NRC license.

- 6.1. The RPO will keep a permanent record of the ash survey results in the "Survey Log" and will notify the incinerator operator how to dispose of the ash.
- 6.2. If no radioactivity can be detected in the ash, it will be put in plastic bags, sealed and placed in the normal trash for landfill disposal.
- 6.3. If radioactivity is detected, the ash will be subjected to additional incineration and will be retested.

7. Consult the RPO or his designee for assistance with any question concerning incineration of radioactive materials.

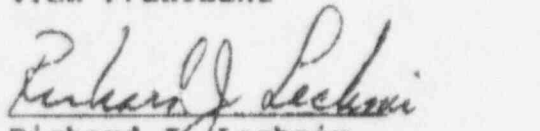
REVIEWED BY:


Collin H. Schroeder, Ph.D.
Vice President

DATE:

1/10/94

APPROVED BY:


Richard J. Lechnir
Radiation Protection Officer

DATE:

1/10/94

11. Waste Management

Radiolabeled wastes are managed in three ways:

- A. Disposal to the sanitary sewer
- B. Disposal to the atmosphere by incineration or other exchange
- C. Disposal by decay-in-storage

A. Disposal to the Sanitary Sewer

Readily water soluble (or readily water dispersible if biological) radiolabeled wastes will be flushed into the sanitary sewer in amounts that will not exceed those listed in 10 CFR 20, Appendix B to par. 20.1001-20.2401, Table 3. The allowable amounts are dependent upon the water usage of the facility. Calculations of allowable sewerage disposal are found in the Waste Disposal Attachment, Item #11. Details of the sewer disposal program in Derse & Schroeder's standard operating procedure, "DISPOSAL - RADIOACTIVE WASTE" are also found there.

Currently the above conditions allow the following amounts of licensed material to be disposed in the sanitary sewer.

	Monthly		Yearly	
Carbon-14	100	mCi	1000	mCi
Hydrogen-3	500	mCi	5000	mCi
Sulfur-35	40	mCi	400	mCi
Phosphorous-32	10	mCi	100	mCi
Phosphorous-33	10	mCi	100	mCi
Chromium-51	1	mCi	10	mCi
Iodine-125	1	mCi	10	mCi

B. Disposal to the Atmosphere by Incineration or other Exchange

Gaseous licensed materials may be disposed of to the atmosphere if the maximum concentrations will not exceed 10% of the amounts listed in 10 CFR 20, Appendix B to paragraphs 20.1001-20.2401, Table 2, Column 1.

The great majority of Carbon-14, Hydrogen-3, and sulfur-35 contaminated waste will be disposed of by incineration in amounts that will not exceed concentrations above those listed in 10 CFR 20, Appendix B to paragraphs 20.1001-20.2401, Table 2, Column 1. We intend to limit our disposal to the levels

*From Application
dated 9/22/93*

which were previously approved when the incinerator was installed. Those levels and isotopes are listed in number 2 of the following:

[Details of incineration are described below. The item numbers correspond to paragraphs in "Incineration Guidelines for Material Licensees", June 13, 1984]

1. Characteristics of incinerator and site

Location - Housed in a separate, secure, metal outbuilding about 10 feet from the laboratory building
Distance from stack to nearest air intake - 58 feet
Area map in the Waste Management Attachment, Item #11 gives distances to other adjacent buildings

Incinerator Specifications:

Brule' pathological incinerator, model MG-10 H,
two-chamber unit
combustion chamber - 100,000 BTU/hr
after-burner chamber - 150,000 BTU/hr
after-burner temperature - 1800° F
exhaust flow rate - 590 ACFM
batch feed
capacity - max. 35 lbs/hr of type 4 waste
max. 50 lbs/hr of type 0 and 1 waste
stack height - 17.6 feet

2. Types of isotopes and amounts to be incinerated

Individual Isotopes burned separately:

<u>Isotope</u>	<u>Maximum radioactivity per day</u>
Carbon-14	400 microcuries
Hydrogen-3	1000 microcuries
Sulfur-35	45 microcuries

Isotopes burned in combination:

<u>Isotope</u>	<u>Maximum radioactivity per day</u>
Carbon-14	200 microcuries
Hydrogen-3	500 microcuries
Sulfur-35	45 microcuries

Calculated maximum radioactivity concentration at ground level (100 meters downwind):

Isotope	Radioactivity conc. (uCi/ml)	Maximum conc. allowed (uCi/ml)*	% of Allowed conc.
---------	------------------------------	---------------------------------	--------------------

(Averaged over 24 hours)

C-14	2.5×10^{-12}	3×10^{-7}	0.0008
H-3	6.4×10^{-12}	1×10^{-7}	0.006
S-35	2.9×10^{-13}	3×10^{-9}	0.010

(Averaged over 1 year)

C-14	1.8×10^{-12}	3×10^{-7}	0.0006
H-3	4.5×10^{-12}	1×10^{-7}	0.005
S-35	2.0×10^{-13}	3×10^{-9}	0.007

Calculated sum of ratios for isotopes incinerated in mixture:

Isotope	Radioactivity conc. (uCi/ml)	Maximum conc. allowed (uCi/ml)*	Sum of ratios
---------	------------------------------	---------------------------------	---------------

(Averaged over 24 hours)

C-14	1.2×10^{-12}	3×10^{-7}	
H-3	3.2×10^{-12}	1×10^{-7}	
S-35	2.9×10^{-13}	3×10^{-9}	0.00013

(Averaged over 1 year)

C-14	9.1×10^{-13}	3×10^{-7}	
H-3	2.3×10^{-12}	1×10^{-7}	
S-35	2.0×10^{-13}	3×10^{-9}	0.00009

All of these values are well within 10% of the allowed concentrations thus complying with the ALARA philosophy.

* 10 CFR 20 Appendix B to par. 20.1001-20.2401, Table 2, Column 1

Calculations of airborne effluents, and Derse & Schroeder standard operating procedure, Radio. 4.3 "INCINERATION OF RADIOACTIVE WASTE" are found in the Waste Management Attachment, Item #11.

3. Determination of concentration of released airborne effluents

The released airborne effluents are dependent upon the amounts of radiolabeled waste incinerated. Those calculations have been made for the maximum allowable waste to be incinerated and are fractions of a percent of the allowable released airborne effluents.

4. Weekly and yearly maximum number of burns

Maximum time per burn - 2 hours

Weekly - 5 burns

Yearly - 260 burns

5. Method for measuring concentration of radioactive material in ash residue

Whenever ash is to be removed from the incinerator after radioisotopes have been burned, the radioactivity concentration will be determined (by RPO or assistant) by suspending 1-gm aliquots of ash in liquid scintillation solution. Five such samples will be prepared and counted. The average concentration of radioactivity will be calculated from this data. A record of ash analyses will be maintained. Ash, except for monitoring samples, will not be removed from the incinerator until the monitoring data has been evaluated.

If the ash does not exceed the maximum radioactivity concentration allowed for water in 10 CFR 20, Appendix B to paragraphs 20.1001-20.2401, Table 2, Column 2 (^{14}C 3×10^{-5} uCi/g; ^3H 1×10^{-3} uCi/g; ^{35}S 1×10^{-4} uCi/g) it will be considered nonradioactive. The ash will be secured in plastic bags by the incinerator operator and be disposed in landfill by the municipal sanitation department.

If the ash contains radioactivity concentrations greater than those specified for water, it will be re-incinerated.

epc. 22, 1993

6. Procedures limiting exposure

The material to be burned will be isolated from personnel as follows:

- A. Scintillation solutions will be burned in closed vials. Occasionally, scintillation will be absorbed on an absorbent such as wood chips. Such waste will be secured in plastic bags before incineration.
- B. Waste paper, wipes, and other combustible waste will be placed in plastic bags before incineration.
- C. All radioactive materials to be burned will be clearly marked identifying the isotope and the amount of estimated activity.
- D. Any special toxicological or chemical hazards will be indicated on the label.
- E. The radiation protection officer or the assistant will supervise securing and storing of bags of waste for incineration.

Instructions for Handling Combustibles for Incineration

The instructions for the incinerator operator are detailed in Derse & Schroeder standard operating procedure, Radio.

4.3 "INCINERATION OF RADIOACTIVE WASTE" found in the Waste Management Attachment, Item 11.

7. (A) State and Local Permits

The state has accepted the NRC recommendation for the maximum radioactivity incinerated per burn.

Our state permit is found in the Waste Disposal Attachment. Local government yields to the state authority.

(B) State and local notification of intent to incinerate radioisotopes

A Letter to the local government specifying our intent to incinerate low level radiolabeled waste and our state permit specifying the radioisotopes and amounts that may be incinerated are found in the Waste Disposal Attachment.

C. Decay-in-storage

Radioactive waste containing isotopes with a physical half-life of less than 65 days will be held for decay-in-storage before disposal in ordinary trash.

The waste will be stored in receptacles in a locked area which will be inspected weekly for unauthorized entry. Adjacent unrestricted areas are surveyed with a survey meter to ensure that radiation levels do not exceed 2 millirem/hr. The storage area will be surveyed monthly for stored amounts of less than 1 millicurie and weekly for amounts of 1 mCi or above.

Before disposal in ordinary trash, the waste will be held for decay a minimum of 10 half-lives and will be surveyed by meter to determine that its radioactivity cannot be distinguished from background. Records of these surveys will be made and maintained by the RPO. All radiation labels will be removed or obliterated before disposal.



****Facsimile
Request****

Date:

August 1, 1996

Message For: Joseph Decicco

Of: NMSS

Facsimile Number: (301) 415-5369

Telephone Number: (301) 415-7833

Number of Pages (including this form): 12

From
James R. Mullauer, M.H.S.
Health Physicist
United States
Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Telephone Number: (708) 829-9873

Fax Number:

(708) 515-1259

January 10, 1994

Dr. Peter Lee
Region III Licensing Section
Division of Fuel Cycle and Material Safety
Nuclear Regulatory Commission
799 Roosevelt road
Glen Ellyn, IL 60137

Control No. 395787

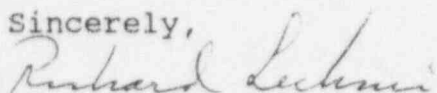
Additional information for renewal of license # 48-20213-01

Dear Dr. Lee:

Please find enclosed a modification of page 13 of our license renewal application as we discussed by phone. Item #5 on that page has been changed to read that no incinerator ash will be disposed to landfill unless no radioactivity can be detected.

Our SOP covering incineration, Radio. 4.3 "INCINERATION OF RADIOACTIVE WASTE" has been modified to reflect the above as well.

Sincerely,



Richard Lechnir
Radiation Protection Officer

Enclosures

RECEIVED

JAN 19 1994

REGION III

(Jan 10, 1994 modification of license renewal application)

Calculations of airborne effluents, and Derse & Schroeder standard operating procedure, Radio. 4.3 "INCINERATION OF RADIOACTIVE WASTE" are found in the Waste Management Attachment, Item #11.

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4. Weekly and yearly maximum number of burns

Maximum time per burn - 2 hours

Weekly - 5 burns

Yearly - 260 burns

5. Method for monitoring ash for radioactivity

Whenever ash is to be removed from the incinerator after radioisotopes have been burned, the ash will be analyzed for radioactivity (by RPO or designee). Aliquots of ash will be suspended in liquid scintillation "cocktail" with sufficient water to form a homogeneous gel. Five such samples will be prepared and analyzed by liquid scintillation counting along with an ash "background" sample. If the counts per minute of the samples are no more than two times the background counts per minute, the ash will be considered to contain no detectable radioactivity. If the ash contains detectable radioactivity, it will be re-incinerated and retested. Ash, except for monitoring samples, will not be removed from the incinerator until it has been shown to contain no detectable radioactivity.

If radioactivity cannot be detected in the ash, it will be secured in plastic bags by the incinerator operator and be disposed in landfill by the municipal sanitation department.

(Jan 10, 1994 modification of license renewal application)

Calculations of airborne effluents, and Derse & Schroeder standard operating procedure, Radio. 4.3 "INCINERATION OF RADIOACTIVE WASTE" are found in the Waste Management Attachment, Item #11.

3. Determination of concentration of released airborne effluents

The released airborne effluents are dependent upon the amounts of radiolabeled waste incinerated. Those calculations have been made for the maximum allowable waste to be incinerated and are fractions of a percent of the allowable released airborne effluents.

4. Weekly and yearly maximum number of burns

Maximum time per burn - 2 hours

Weekly - 5 burns

Yearly - 260 burns

5. Method for monitoring ash for radioactivity

Whenever ash is to be removed from the incinerator after radioisotopes have been burned, the ash will be analyzed for radioactivity (by RPO or designee). Aliquots of ash will be suspended in liquid scintillation "cocktail" with sufficient water to form a homogeneous gel. Five such samples will be prepared and analyzed by liquid scintillation counting along with an ash "background" sample. If the counts per minute of the samples are no more than two times the background counts per minute, the ash will be considered to contain no detectable radioactivity. If the ash contains detectable radioactivity, it will be re-incinerated and retested. Ash, except for monitoring samples, will not be removed from the incinerator until it has been shown to contain no detectable radioactivity.

If radioactivity cannot be detected in the ash, it will be secured in plastic bags by the incinerator operator and be disposed in landfill by the municipal sanitation department.

Derse & Schroeder Associates, Ltd.
Madison, WI

TECHNICAL OPERATING PROCEDURE

Radio. 4.4
PAGE: 1 of 3
DATE: 1-10-94
REPLACES: Radio. 4.3
dated 9-16-93

TITLE: INCINERATION OF RADIOACTIVE WASTE

PRINCIPLE: Special precautions must be taken when incinerating radioactive wastes (^{35}S , ^{14}C , and ^3H) to ensure the safety of the incinerator operator and to prevent the issuance of radioactivity above the allowable levels into unrestricted areas.

PROCEDURE:

1. Before starting the incinerator, make sure a layer of ash covers the floor of the firebox to prevent molten glass from contacting the refractory.
2. Operate the incinerator according to the operation instructions posted in the incinerator room.
3. Wear disposable latex gloves when handling bags containing radioactive waste. When bag-handling has been completed, put the gloves in the incinerator. Do not leave radioactive waste outside unattended.
4. Check all packages and bags for leaks and proper labeling. Bags containing iodine-125, phosphorous-32, phosphorous-33, and chromium-51 may not be incinerated. Chlorinated materials, e.g. polyvinyl chloride gloves, may never be incinerated with aromatic solvents, e.g. toluene and scintillation "cocktail", regardless of incineration conditions. Chlorinated materials may be incinerated at or above 1800°F , however the use of chlorinated materials with radioisotopes is specifically prohibited in this facility by authority of standard operating procedures.

Derse & Schroeder Assoc. Ltd.
Madison, Wis.

Radio. 4.4
PAGE: 2 of 3
DATE: 1-10-94
REPLACES: Radio. 4.3
dated 9-16-93

4.1. If evidence of leaks exists, or if bags contain isotopes that may not be incinerated, contact the Radiation Protection Officer (RPO) for monitoring of possible contamination and disposal. Leaky packages should be handled minimally prior to clearance by the RPO.

4.2. The label will state the isotope and quantity of radioactivity contained. Make sure all packages of waste contaminated with one isotope contain less than:

400 uCi Carbon-14 or
1000 uCi Hydrogen-3 or
45 uCi Sulfur-35

and all packages having mixed isotopes contain less than:

200 uCi Carbon-14 and
500 uCi Hydrogen-3 and
45 uCi Sulfur-35

Notify the RPO if any package labels are above these limits. These limits are also for one day's incineration regardless of the number of bags burned.

5. Log the identity of the isotope, description of material, the quantity of radioactivity, and incineration time in the "Radioisotope Disposal" logbook or transfer the information to the RPO.

Derse & Schroeder Assoc. Ltd.
Madison, Wis.

Radio. 4.4
PAGE: 3 of 3
DATE: 1-10-94
REPLACES: Radio. 4.3
dated 9-16-93

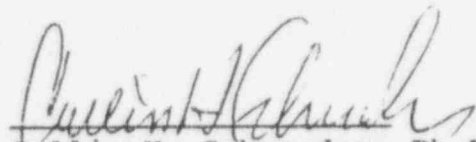
6. Ash removal

Before removing ash from the incinerator, notify the RPO or his designee of this action. The RPO or his designee will test ash samples for radioactivity before ash removal. Details of ash monitoring can be found in the NRC license.

- 6.1. The RPO will keep a permanent record of the ash survey results in the "Survey Log" and will notify the incinerator operator how to dispose of the ash.
- 6.2. If no radioactivity can be detected in the ash, it will be put in plastic bags, sealed and placed in the normal trash for landfill disposal.
- 6.3. If radioactivity is detected, the ash will be subjected to additional incineration and will be retested.

7. Consult the RPO or his designee for assistance with any question concerning incineration of radioactive materials.

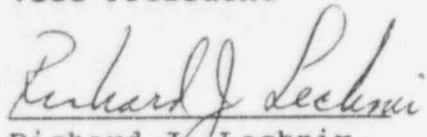
REVIEWED BY:


Collin H. Schroeder, Ph.D.
Vice President

DATE:

1/10/94

APPROVED BY:


Richard J. Lechnir
Radiation Protection Officer

DATE:

1/10/94

11. Waste Management

Radiolabeled wastes are managed in three ways:

- A. Disposal to the sanitary sewer
- B. Disposal to the atmosphere by incineration or other exchange
- C. Disposal by decay-in-storage

A. Disposal to the Sanitary Sewer

Readily water soluble (or readily water dispersible if biological) radiolabeled wastes will be flushed into the sanitary sewer in amounts that will not exceed those listed in 10 CFR 20, Appendix B to par. 20.1001-20.2401, Table 3. The allowable amounts are dependent upon the water usage of the facility. Calculations of allowable sewerage disposal are found in the Waste Disposal Attachment, Item #11. Details of the sewer disposal program in Derse & Schroeder's standard operating procedure, "DISPOSAL - RADIOACTIVE WASTE" are also found there.

Currently the above conditions allow the following amounts of licensed material to be disposed in the sanitary sewer.

	<u>Monthly</u>		<u>Yearly</u>	
Carbon-14	100	mCi	1000	mCi
Hydrogen-3	500	mCi	5000	mCi
Sulfur-35	40	mCi	400	mCi
Phosphorous-32	10	mCi	100	mCi
Phosphorous-33	10	mCi	100	mCi
Chromium-51	1	mCi	10	mCi
Iodine-125	1	mCi	10	mCi

B. Disposal to the Atmosphere by Incineration or other Exchange

Gaseous licensed materials may be disposed of to the atmosphere if the maximum concentrations will not exceed 10% of the amounts listed in 10 CFR 20, Appendix B to paragraphs 20.1001-20.2401, Table 2, Column 1.

The great majority of Carbon-14, Hydrogen-3, and sulfur-35 contaminated waste will be disposed of by incineration in amounts that will not exceed concentrations above those listed in 10 CFR 20, Appendix B to paragraphs 20.1001-20.2401, Table 2, Column 1. We intend to limit our disposal to the levels

*From Application
dated 9/22/93*

which were previously approved when the incinerator was installed. Those levels and isotopes are listed in number 2 of the following:

[Details of incineration are described below. The item numbers correspond to paragraphs in "Incineration Guidelines for Material Licensees", June 13, 1984]

1. Characteristics of incinerator and site

Location - Housed in a separate, secure, metal outbuilding
about 10 feet from the laboratory building
Distance from stack to nearest air intake - 58 feet
Area map in the Waste Management Attachment, Item #11 gives
distances to other adjacent buildings

Incinerator Specifications:

Brule' pathological incinerator, model MG-10 H,
two-chamber unit
combustion chamber - 100,000 BTU/hr
after-burner chamber - 150,000 BTU/hr
after-burner temperature - 1800° F
exhaust flow rate - 590 ACFM
batch feed
capacity - max. 35 lbs/hr of type 4 waste
max. 50 lbs/hr of type 0 and 1 waste
stack height - 17.6 feet

2. Types of isotopes and amounts to be incinerated

Individual Isotopes burned separately:

<u>Isotope</u>	<u>Maximum radioactivity per day</u>
Carbon-14	400 microcuries
Hydrogen-3	1000 microcuries
Sulfur-35	45 microcuries

Isotopes burned in combination:

<u>Isotope</u>	<u>Maximum radioactivity per day</u>
Carbon-14	200 microcuries
Hydrogen-3	500 microcuries
Sulfur-35	45 microcuries

Calculated maximum radioactivity concentration at ground level (100 meters downwind):

Isotope	Radioactivity conc. (uCi/ml)	Maximum conc. allowed (uCi/ml)*	% of Allowed conc.
---------	------------------------------	---------------------------------	--------------------

(Averaged over 24 hours)

C-14	2.5×10^{-12}	3×10^{-7}	0.0008
H-3	6.4×10^{-12}	1×10^{-7}	0.006
S-35	2.9×10^{-13}	3×10^{-9}	0.010

(Averaged over 1 year)

C-14	1.8×10^{-12}	3×10^{-7}	0.0006
H-3	4.5×10^{-12}	1×10^{-7}	0.005
S-35	2.0×10^{-13}	3×10^{-9}	0.007

Calculated sum of ratios for isotopes incinerated in mixture:

Isotope	Radioactivity conc. (uCi/ml)	Maximum conc. allowed (uCi/ml)*	Sum of ratios
---------	------------------------------	---------------------------------	---------------

(Averaged over 24 hours)

C-14	1.2×10^{-12}	3×10^{-7}	0.00013
H-3	3.2×10^{-12}	1×10^{-7}	
S-35	2.9×10^{-13}	3×10^{-9}	

(Averaged over 1 year)

C-14	9.1×10^{-13}	3×10^{-7}	0.00009
H-3	2.3×10^{-12}	1×10^{-7}	
S-35	2.0×10^{-13}	3×10^{-9}	

All of these values are well within 10% of the allowed concentrations thus complying with the ALARA philosophy.

* 10 CFR 20 Appendix B to par. 20.1001-20.2401, Table 2, Column 1

Calculations of airborne effluents, and Derse & Schroeder standard operating procedure, Radio. 4.3 "INCINERATION OF RADIOACTIVE WASTE" are found in the Waste Management Attachment, Item #11.

3. Determination of concentration of released airborne effluents

The released airborne effluents are dependent upon the amounts of radiolabeled waste incinerated. Those calculations have been made for the maximum allowable waste to be incinerated and are fractions of a percent of the allowable released airborne effluents.

4. Weekly and yearly maximum number of burns

Maximum time per burn - 2 hours

Weekly - 5 burns

Yearly - 260 burns

5. Method for measuring concentration of radioactive material in ash residue

Whenever ash is to be removed from the incinerator after radioisotopes have been burned, the radioactivity concentration will be determined (by RPO or assistant) by suspending 1-gm aliquots of ash in liquid scintillation solution. Five such samples will be prepared and counted. The average concentration of radioactivity will be calculated from this data. A record of ash analyses will be maintained. Ash, except for monitoring samples, will not be removed from the incinerator until the monitoring data has been evaluated.

If the ash does not exceed the maximum radioactivity concentration allowed for water in 10 CFR 20, Appendix B to paragraphs 20.1001-20.2401, Table 2, Column 2 (^{14}C 3×10^{-5} uCi/g; ^3H 1×10^{-3} uCi/g; ^{35}S 1×10^{-4} uCi/g) it will be considered nonradioactive. The ash will be secured in plastic bags by the incinerator operator and be disposed in landfill by the municipal sanitation department.

If the ash contains radioactivity concentrations greater than those specified for water, it will be re-incinerated.

6. Procedures limiting exposure

The material to be burned will be isolated from personnel as follows:

- A. Scintillation solutions will be burned in closed vials. Occasionally, scintillation will be absorbed on an absorbent such as wood chips. Such waste will be secured in plastic bags before incineration.
- B. Waste paper, wipes, and other combustible waste will be placed in plastic bags before incineration.
- C. All radioactive materials to be burned will be clearly marked identifying the isotope and the amount of estimated activity.
- D. Any special toxicological or chemical hazards will be indicated on the label.
- E. The radiation protection officer or the assistant will supervise securing and storing of bags of waste for incineration.

Instructions for Handling Combustibles for Incineration

The instructions for the incinerator operator are detailed in Derse & Schroeder standard operating procedure, Radio. 4.3 "INCINERATION OF RADIOACTIVE WASTE" found in the Waste Management Attachment, Item 11.

7. (A) State and Local Permits

The state has accepted the NRC recommendation for the maximum radioactivity incinerated per burn. Our state permit is found in the Waste Disposal Attachment. Local government yields to the state authority.

(B) State and local notification of intent to incinerate radioisotopes

A Letter to the local government specifying our intent to incinerate low level radiolabeled waste and our state permit specifying the radioisotopes and amounts that may be incinerated are found in the Waste Disposal Attachment.

C. Decay-in-storage

Radioactive waste containing isotopes with a physical half-life of less than 65 days will be held for decay-in-storage before disposal in ordinary trash.

The waste will be stored in receptacles in a locked area which will be inspected weekly for unauthorized entry. Adjacent unrestricted areas are surveyed with a survey meter to ensure that radiation levels do not exceed 2 millirem/hr. The storage area will be surveyed monthly for stored amounts of less than 1 millicurie and weekly for amounts of 1 mCi or above.

Before disposal in ordinary trash, the waste will be held for decay a minimum of 10 half-lives and will be surveyed by meter to determine that its radioactivity cannot be distinguished from background. Records of these surveys will be made and maintained by the RPO. All radiation labels will be removed or obliterated before disposal.

APR 26 1996

96-37

REGIONAL TECHNICAL ASSISTANCE REQUEST FORM

Date: April 15, 1996

Don Cool (DAC), Mail Stop: 6H3-OWFN, Division of Industrial and Medical Nuclear Safety, NMSS

From: John R. Madera, Region III, Chief, Nuclear Materials Licensing Branch

Request for incineration as a service to other licensees (Derse & Schroeder Associates, LTD. License No. 48-20213-01)

☐ Control No. 301093

☐ Letter dated: March 18, 1996 (enclosed)

Problem/Issue: Attached is the licensee's request to incinerate waste for other licensees. The licensee has a limited R&D program and is currently authorized to incinerate radioactive waste in accordance with license Condition No. 16. The licensee is requesting authorization to incinerate radioactive waste for three other licensees who happen to occupy the same building as Derse & Schroeder. The three other licensees are limited R & D Labs. Incineration would include less than 2 millicuries total per year which would include Carbon-14, Tritium and Sulfur-35. The authorization would be limited to these other three licensees only.

☐ Action Required: Please provide guidance how Region III should approach this request. It is unclear whether the existing license can be amended to authorize incineration service or if the licensee would need to apply for a separate service license. In a telephone conversation with the RSO for Derse & Schroeder, the reviewer learned that there would be a nominal fee assessed for the incinerator operators time spent incinerating waste from the other 3 licensees. According to the RSO, this fee is a break even fee only and does not provide any profit as a result of the service.

Please also provide guidance how Region III should implement PG 8-10 dated February 7, 1996, (enclosed). Since the licensee is already authorized to incinerate radioactive waste, do we need to address the issues in PG 8-10 at this time or should that be addressed during the next license renewal.

☐ Recommended Action (with revisions): N/A Approve or ☐ Reject

APR 26 1996

D. Cool

-2-

It appears that the licensee is willing to perform the incineration service as a good fellowship gesture due to the proximity of the licensees (all being in one building), not as a commercial service. It is the opinion of Region III that the licensee may be authorized to perform this service as long as the service is not commercial. (Reference University of Wisconsin - Green Bay Wisconsin TAR No. 95-07, Control No. 397800 (enclosed))

Headquarters Reviewer: _____

Regional Reviewer: James R. Mullauer, M.H.S.

Reviewer Code: R4

Reviewer Phone No. (708) 301-9873 Fax No. (708) 515-1259

Request Needed by: June 7, 1996

Attachments: 1. License No. 48-20213-01
2. PG 8-10
3. TAR No. 95-07
4. Letter dated March 18, 1996

cc: C. Pederson

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NAME	JRMullauer:brt	JRMadera					
DATE	04/19/96	04/ /96					

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DERSE & SCHROEDER ASSOCIATES, LTD.
DEVELOPMENTAL SCIENCE

PHILIP H. DERSE
COLLIN H. SCHROEDER

1202 ANN STREET
MADISON, WISCONSIN 53713
(608) 251-3005 • FAX (608) 251-3007

March 18, 1996

Mr. John Madera
Chief, Materials Licensing Branch
U. S. Nuclear Regulatory Commission
Region III
801 Warrensville Rd.
Lisle, IL 60532-4351

A
030-18104

Re: Amendment to Derse & Schroeder NRC license # 48-20213-01

Dear Mr. Madera:

We wish to amend our U.S. Nuclear Regulatory Commission license, #48-20213-01, as follows:

- (1) Remove the following names from our list of individuals responsible for the radiation safety program after the new licenses have been granted for Kendrick Laboratories, Metabolic Analysis, and Epicentre Technologies. Applications for these licenses have been made.

John Noonan	Jerry Jendrisak
Mary Schmidt	Nancy Kendrick

- (2) Allow Derse & Schroeder to incinerate radioisotope-contaminated laboratory waste for other NRC licensees within our building, specifically, Kendrick Laboratories, Metabolic Analysis, and Epicentre Technologies, when their individual NRC licenses have been granted.

Derse & Schroeder manages the laboratory building at 1202 Ann St., Madison, WI which is owned by the building tenants under the corporation "Laboratory Associated Businesses, Ltd". Derse & Schroeder, Kendrick, Metabolic, and Epicentre are tenants and shareholders in the facility.

Derse and Schroeder is presently permitted to incinerate radioisotope contaminated waste (C-14, 400 uCi/day; H-3, 1000 uCi/day; S-35, 45 uCi/day) under the Derse & Schroeder NRC license. We do not wish to change our present incineration conditions, only to be allowed to incinerate the waste from those other licensees within the building. We do not wish to be in the disposal business, we only wish to facilitate radioisotope disposal for the above named tenants in an economical and safe manner.

We believe the following reasons make granting this amendment the best way to handle disposal of radioactive waste from our facility:

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Derse & Schroeder Assoc., Ltd.

March 18, 1996

page 2

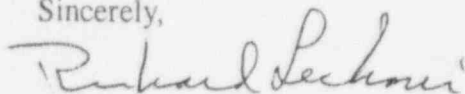
- A. Our present license which includes Derse & Schroeder "standard operating procedures" speaks in detail to the safe handling and incineration of radioisotope-contaminated waste. We keep detailed records of each incineration and have safely conducted incineration disposal since 1985. Derse & Schroeder is responsible for monitoring the ash before removal from the incinerator and safe disposal of that ash. Derse & Schroeder will continue that responsibility.
- B. Our incinerator operator is given a yearly safety refresher and is closely supervised by the radiation safety officer.
- C. We have no difficulty staying within our permitted incineration limits. Historically, the average amount of radioisotope-contaminated waste incinerated per year and the maximum incinerated in any one year over the last three years are in the following table. These figures include radioisotope-contaminated waste for the entire facility.

	<u>C-14(uCi)</u>	<u>H-3(uCi)</u>	<u>S-35(uCi)</u>
yearly average	1391	117	283
yearly maximum	1593	224	461
allowed by license	104,000	260,000	11,700

- D. The aforementioned building tenants are very small businesses. Incineration would make it unnecessary for them to accumulate and store waste for many months while awaiting landfill disposal. Although the amounts (uCi) incinerated are quite small, the waste represents a considerable amount of bulk and landfill disposal would be very expensive. The economies of incineration will help these small companies remain in business.

Thank you for your consideration of these amendment requests. Enclosed please find our check in the amount of \$610, the fee for this action.

Sincerely,



Richard Lechnir
Radiation Safety Officer

UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION III
801 WARRENVILLE ROAD
LISLE, ILLINOIS 60532-4351

March 15, 1996

MEMORANDUM TO: Donald A. Cool, Director
Division of Industrial and Medical Nuclear Safety, NMSS

FROM: *Cynthia D. Pederson*
Cynthia D. Pederson, Director
Division of Nuclear Materials Safety, RIII

SUBJECT: DRAFT POLICY AND GUIDANCE DIRECTIVE PG 8-10: GUIDANCE ON
DISPOSAL OF INCINERATOR ASH AS ORDINARY WASTE

This purpose of this memorandum is to provide comments on the subject draft Policy and Guidance Directive. Our comments, discussed in detail below, address the following issues: (1) acceptable procedures for sampling and analyzing ash; (2) acceptable methods for calculating radionuclide concentrations in ash, in lieu of sampling and analyzing; (3) demonstrating compliance; and (4) the new standard license condition.

The draft guidance limits the concentration of several radionuclides that may be disposed to a landfill to 10 percent of the value in Appendix B, Table 2, Column 2 for water. One of the radionuclides is carbon-14. Ten percent of the Part 20 limit for carbon-14 is $3E-6 \mu\text{Ci/g} = 3 \text{ pCi/g} = 7 \text{ dpm/g}$. Given this low threshold for disposing of ash containing carbon-14 and the difficulty most licensees will have in detecting these levels, we feel the guidance should include examples of acceptable procedures for sampling and analyzing ash, especially for the pure beta emitters, carbon-14 and hydrogen-3.

We are concerned that most licensees will not be able to demonstrate compliance by way of measuring the concentration of C-14 and H-3. As noted in your memo, an alternative to measuring the concentration would be performing a calculation in accordance with 20.1501(a)(2). The guidance should include methodology the NRC would accept. Also, clarification is requested on the term "average concentration." Specifically, is it acceptable for licensee's to combine non-radioactive and radioactive waste in order to lower the concentration to releasable limits?

Region III has implemented the new policy for one licensee. The licensee's waste disposal program authorizes them to incinerate up to $300 \mu\text{Ci}$ of C-14 waste per burn. Assuming 1% is retained in the ash (reference Health Physics 62(2) 183-5, 1992), they expect no more than $3 \mu\text{Ci}$ to remain in the ash. In order to achieve a concentration of 3 pCi/g , the licensee would have to burn a total of $1E6$ grams, or 2200 pounds of waste. They average 20-30 pounds of

CONTACT: Kevin Null, RIII/DNMS
(708) 829-9854

waste per 300 μ Ci of C-14 that is burned. The licensee stated it is no longer cost beneficial to incinerate radioactive waste contaminated with C-14. Mixing nonradioactive waste with radwaste may help achieve the low concentration; however, accumulating 2000 pounds of nonradioactive waste is costly and will require additional room for storage.

Our final comment pertains to the new standard license condition. The condition specifies release limits for all radionuclides, i.e., it combines those that can be released in accordance with Part 20, Appendix B, Table 2, Column 2 limits for water, and those that cannot exceed 10 percent of Appendix B, Table 2 values. Recently, we were instructed by NMSS not to modify standard license conditions. In this case, however, the Region believes it should be allowed to modify the condition to "fit" a particular licensee's situation. For example, the condition should be modified to reference only the radionuclide(s) a licensee is authorized to incinerate. Inclusion of additional radionuclides may be interpreted by some licensees that they can burn these materials as well.

cc: C. W. Hehl, RI
B. S. Mallett, RII
R. A. Scarano, RIV
S. A. Treby, OGC
G. C. Pangburn, NMSS
R. L. Baer, NMSS
M. V. Federline, NMSS

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

April 13, 1995

95-07

MEMORANDUM TO: John R. Madera, Chief
Nuclear Materials Licensing Section
Division of Radiation Safety and Safeguards, RIII

FROM: Larry W. Camper, Chief *Larry W. Camper*
Medical, Academic, and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

SUBJECT: TECHNICAL ASSISTANCE REQUEST, DATED FEBRUARY 14, 1995,
REGARDING THE AMENDMENT REQUESTS FROM THE UNIVERSITY OF
WISCONSIN, GREEN BAY TO ALLOW KEWAUNEE NUCLEAR POWER TO
PERFORM THEIR SURVEY INSTRUMENT CALIBRATIONS (CONTROL
NO. 397800)

I am responding to your technical assistance request (TAR) (attached), dated February 14, 1995, regarding the amendment requests from the University of Wisconsin, Green Bay (UW-Green Bay) to allow Kewaunee Nuclear Power (KNP) to perform their survey instrument calibrations.

The TAR does not provide sufficient information regarding UW-Green Bay's survey instruments and license program to make a determination on the appropriateness of the KNP calibration procedure. The procedure provided appears to be very specific to two particular instruments, the PIC-6A and PIC-6B; therefore, it is assumed that the region will determine the sufficiency of the calibration procedure as it relates to UW-Green Bay. There are two issues that can be resolved at this point:

- 1) If the licensee chooses to have a contractor perform its instrument calibrations, does the contractor have to be licensed by the NRC to provide this service?

There is no requirement that an entity which provides a calibration service be licensed by the NRC to provide the service, the only limitation (e.g., 10 CFR 20.1501) is that the instruments be calibrated in accordance with the regulatory requirements for the licensee's uses, e.g., for a 10 CFR Part 35 licensee the survey instruments must be calibrated in accordance with 10 CFR 35.51. A service provider would only need to have an NRC license, if that provider would need to possess licensed material to perform the calibration. In this case KNP is already licensed to possess and use NRC licensed material for the purpose of calibrating survey instruments. The license does not specify that the instruments have to be possessed by KNP.

CONTACT: James A. Smith, NMSS
(301) 415-7904

APR 17 1995

- 2) If KNP provides the service free of charge, is the service a commercial endeavor, and would a separate license be necessary to provide such a service?

According to the problem summary of the TAR, KNP will not be receiving a fee for this service; therefore, it would not be viewed as a commercial endeavor, and as such, KNP would not be required to obtain a separate materials license to perform these calibrations. If KNP does intend in the future to provide this service on a fee basis as a means of producing revenues separate from electric power generation, then a separate license would be necessary.

Attachment: RIII TAR dtd 2/14/95

MATERIALS LICENSE

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, 39, 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.

395787

Licensee

1. Derse and Schroeder Associates, Ltd.

2. 1202 Ann Street
Madison, WI 53713

In accordance with application dated
September 22, 1993
3. License number 48-20213-01 is renewed in
its entirety to read as follows:

4. Expiration date February 28, 1999

5. Docket or
Reference No. 030-18104

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. Hydrogen-3

B. Carbon-14

C. Sulfur-35

D. Phosphorus-32

E. Phosphorus-33

F. Iodine-125

G. Chromium-51

A. Any

B. Any

C. Any

D. Any

E. Any

F. Any

G. Any

A. 245 millicuries

B. 75 millicuries

C. 20 millicuries

D. 20 millicuries

E. 20 millicuries

F. 5 millicuries

G. 1 millicurie

9. Authorized Use:

A. through G. For research and development as defined in Section 30.4 of 10 CFR Part 30,
including animal studies.

CONDITIONS

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10. Licensed material shall be used only at the licensee's facilities located at
1202 Ann Street, Madison, Wisconsin.

11. A. Licensed material shall be used by, or under the supervision of,
Collin H. Schroeder, John Steele, Steven Vielhuber, Richard J. Lechnir,
Nancy Kendrick, Mary Schmidt, Jerome Jindrisak, John Noonan, Robert E. Smith.

B. The Radiation Safety Officer for this license is Richard J. Lechnir.

12. Experimental animals, or the products from experimental animals, that have been
administered licensed materials shall not be used for human consumption.

13. The licensee shall not use licensed material in field applications where activity is
released except as provided otherwise by specific condition of this license.

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MATERIALS LICENSE
SUPPLEMENTARY SHEETLicense number
48-20213-01Docket or Reference number
030-18104

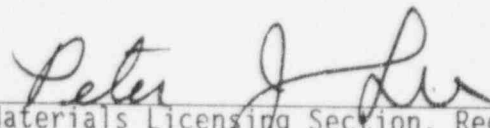
Amendment No. 11

14. The licensee shall not use licensed material in or on human beings except as provided otherwise by specific condition of this license.
15. The licensee is authorized to hold radioactive material with a physical half-life of less than 90 days for decay-in-storage before disposal in ordinary trash provided:
- A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.
 - B. Before disposal as ordinary trash, byproduct material shall be surveyed at the container surface with the appropriate survey meter set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
 - C. A record of each disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
16. Pursuant to 10 CFR 20.106(b) and 10 CFR 20.302, the licensee is authorized to dispose of licensed material by incineration provided the gaseous effluent from incineration does not exceed the limits specified for air in Appendix B, Table II, 10 CFR Part 20.
17. 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 U.S. 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 September 22, 1993; and
 - B. Letter dated January 10, 1994.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date 2-2-94

By


Materials Licensing Section, Region III

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