

PARKE-DAVIS

Pharmaceutical Research Division
Warner-Lambert Company

March 26, 1991

Nuclear Regulatory Commission
Byproduct Licensing Group
799 Roosevelt Road
Glen Ellyn, IL 60137

Attention Keven Null

SUBJECT: Amendment to NRC License # 21-01443-06 Control # 90734

As you requested the additional information and the changes you recommended have been made to the amendment request. In addition I believe you have received the Decommissioning Financial Guarantee from our parent company, Warner-Lambert.

Background Information:

As you are aware, users of licensed material located in Michigan have been denied access to waste disposal sites. This amendment describes long term strategies to minimize the amount of waste generated and methods to safely store the waste until an NRC/EPA approved waste disposal site is available.

This amendment requests an approval for:

1. Separation of short lived radioactive waste, ~~Sold~~ holding that waste for 10 half lives and then disposing of it as non-radioactive.
2. Interim storage of radioactive waste in a completely enclosed room located on the lower section of the new parking structure being constructed on our property. And to raise the authorized isotope limits to cover the waste in interim storage.
3. Allowing the use of 100 mCi of ¹⁸F and ¹²⁵I for a special project.

Please process this amendment as soon as practical because we are starting to experience problems with storage.

A check for the \$400 amendment fee was enclosed with the original amendment.

Please call George Kreick at (313) 996-7115 if you have any questions.

Thank You

George Kreick
George Kreick
Safety Manager

FEE NOT REQUIRED

add info 390734

MAR 27 1991 RECEIVED
MAR 27 1991

ITEM 1

Amendment - ITEM 11 add to section -

Separation of Isotopes with Half Lives Less Than 90 days

RADIOACTIVE WASTE HANDLING PROCEDURES FOR SEPARATION OF LONG AND SHORT LIVED ISOTOPES

Researchers using radioactive materials should separate short and long lived isotope waste when practical.

Short Lived - P-32, S-35, Cr-51, I-125 and others with half life less than 90 days and stable daughters.

Long Lived - H-3, C-14, and Ca-45 are not to be mixed with short lived waste.

Researchers' Responsibility

The authorized user is responsible for ensuring that:

Separate waste pails must be used for the two types of waste. Short lived waste pails must be labeled as such.

All researchers in the lab have been informed of the separation practice.

Each pail is accurately tagged before it is picked up. The tag must list all isotopes, amounts, user's name room number and the date.

Any waste pail returned by Services is repackaged to acceptable standards.

Services Department Responsibility

Picking up properly labeled and packaged waste. Pails should not be picked up if tag does not show isotope, amount, name, room number and date.

Remove bag from pail and examine for closed containers of liquids, blood or other biological materials and sharps. Do not open bag. If problems are found, return bag to pail and return pail to the room it was picked up from. Put note on pail to inform researcher what the problem is. They will repack it.

Pack bags of waste in DOT approved 55 gallon drums. Use separate drums for long and short lived waste. Mark drums as short or long lived. Mark each tag with the ID number of the drum the waste was put in.

Contact Safety Manager if there any questions or problems.

Safety Manager (RSO) Responsibility

Inform and train users of radioactive waste of the proper method of handling radioactive waste.

Collect tags and record the isotopes and amount put in each drum. Review to ensure isotopes have been properly separated.

Record the waste in each drum, date packaged and the location the drum is stored in a permanent record system. A computerized inventory system will be used and hard copy of all file kept in the safety office.

Periodically check tags against user permits to determine if the amount and types of isotopes being disposed of by a lab are reasonable.

Check on compliance with waste separation practice during the quarterly radiation safety audits.

PROCEDURES FOR DESTROYING SHORT LIVED WASTE

Record Keeping - The RSO will maintain records of the waste in each drum of radioactive waste. Records will show the amounts of each isotope, date packaged and storage areas it is held in. The date the waste is declassified will also be recorded.

Holding Period - Solid waste will be held for a minimum of 10 half lives.

The waste will then be considered trash or EPA hazardous waste if it contains hazardous materials. Normally trash will be incinerated. Hazardous waste will be sent off site for incineration or burial in a secured land fill.

INTERIM STORAGE OF RADIOACTIVE WASTE ON-SITE

Radioactive waste, packaged in DOT approved 55 gallon drums and labeled to NRC and DOT standards may be temporarily stored in the location described below. The waste may contain any of the isotopes listed on the license, however, the majority of isotopes will be H-3, C-14 and C-45. Long lived waste will be transported to an approved waste disposal site as soon as a site becomes available to Michigan residents.

Information requested in Attachment 1, IN 90-09

1. IDENTIFICATION OF WASTE BEING STORED -

a. Possession increases are shown below. These include increases for interim storage and for decay in storage programs and two projects using F-18 and I-123.

Please amend Section 6, 7 and 8

Increase of Maximum Possession Limits For Waste Storage

The increases shown are based on holding our radioactive waste for a five year period. Increases are not being requested to enable increased work with isotopes at this site.

New Isotopes For Research Project

Add 18-Fluorine and 123-Iodine to Sections 6, 7 and 8. The isotopes will be used in pharmaceutical research in the same manner as the other isotopes included in the license. The person using the I-123 is in the thyroid monitoring program.

By-product, source and/or special nuclear material	Chemical and/or physical form	Maximum amount that license may possess at any one time under this license
A. Hydrogen-3	A. Any	A. 50 curies
B. Carbon-14	B. Any	B. 50 curies
C. Sodium-22	C. Any	C. 100 millicuries
D. Phosphorus-32	D. Any	D. 200 millicuries
E. Sulfur-35	E. Any	E. 100 millicuries
F. Calcium-45	F. Any	F. 400 millicuries
G. Scandium-46	G. Any	G. 25 millicuries
H. Chromium-51	H. Any	H. 50 millicuries
I. Iron-59	I. Any	I. 25 millicuries
J. Nickel-63	J. Any	J. 10 millicuries
K. Strontium-85	K. Any	K. 25 millicuries
L. Niobium-95	L. Any	L. 25 millicuries
M. Iodine-125	M. Any	M. 400 millicuries
N. Cerium-141	N. Any	N. 25 millicuries
O. Nickel-63	O. Foils or plated sources in detector cells	O. Not to exceed 15 millicuries per foil or source
P. Hydrogen-3	P. Foils in detector cells	P. Not to exceed 1 curie per foil

By-product, source and/or special nuclear material	Chemical and/or physical form	Maximum amount that license may possess at any one time under this license
Q. Strontium-90	Q. Foils in detector cells	Q. Not to exceed 40 millicuries per foil
R. Rubidium-86	R. Any	R. 50 millicuries
S. Fluorine-18	S. Any	S. 100 millicuries
T. Iodine-123	T. Any	T. 100 millicuries

b. At the present time Parke-Davis is producing approximately 5, 55 gallon drums (40 cubic feet) of un-compacted long lived waste and 4, 55 gallon drums (30 cubic feet) of un-compacted short lived waste each month. This waste is from laboratory operations and includes:

Class A, solid non biological waste, glass, plastic, paper, steel, rubber gloves and other solid materials. This represents 99% of the waste volume. With waste compaction approximately 15 to 20 drums per year will be stored. ADCO is presently compacting our waste and returning it to our facility.

Class C, solid non biological waste. Small volumes of stable byproducts of chemical syntheses from our Radio-Chem laboratory are also collected as waste. Less the 0.5 liter of waste per month is collected. This waste normally contains 1 to 2 curies of H-3 and C-14. The plastic container of waste is over packed in a 5 gallon steel drum and then packaged inside a 55 gallon steel drum to provide adequate protection. Arrangements are being made to reprocess this materials back into starting materials for chemical synthesis to reduce or eliminate the Class C waste stream.

Class A short lived waste may also be stored in the storage room. Approximately 60 drums per year will be held in the room at any one time. One third of them will be removed yearly after 10 half lives of decay.

c. Characteristics of Waste -

All waste will be non volatile. No materials classified as a hazardous waste by the EPA will be stored. No radioactive liquids have been handled at this site for 4 years. However, if liquids must be stored, they will be stored in unbreakable containers that are inside secondary containment capable of holding the entire volume of liquid. Aqueous liquids will be absorbed onto EPA approved stabilizing materials.

A review of the isotopes and daughters allowed in our license indicated that no gaseous forms of radioactive isotopes will occur in the waste. See the attached list of daughter. Volatile radioactive waste will not be stored. If volatile materials are produced during a laboratory process they will be chemically changed into non-volatile material as part of the laboratory process.

No materials that can produce heats of decomposition high enough to spontaneously decompose will be stored. No incompatible chemicals will be stored.

No exposed combustible materials will be allowed in the storage area. The room and structure are made of non combustible materials, concrete.

Waste will be processed and packaged for immediate shipment. It will be packaged in DOT approved 55 gallon drums. All drums will be labeled in accordance with 10CFR 20.203 and 20.311.

Amounts of waste

Class A, dry solid waste - Twenty drums (150 cf) of compacted waste per year or 80 drums (600 cf) of un-compacted waste.

Class B, none

Class C, dry chemically stable solid. 1 drum (7.5 cf) of un-compacted waste per year.

All waste is not considered hazardous by EPA or Michigan DNR.

d. At the present time 40 drums of long lived waste are in transit to the super-compactor. ADCO is transporting the waste and will return in to our site in April or May. The 10 drums of compacted waste will be held in our present radioactive waste room until interim storage is approved.

e. No local or state approvals are needed for the storage. The Michigan Public Health Department is aware of the storage. Local Fire and Haz Mat teams will be made aware of the storage before any waste is move to the storage area. These people are already aware of the present radioactive waste processing areas in our facility.

2. PLANS FOR FINAL DISPOSAL -

a. No waste disposal sites are available for our radioactive waste.

b. Radioactive waste in interim storage will be moved to a properly licensed depository as soon as one becomes available for Michigan residents. Discussions with Michigan Department Of Public Health staff indicate such a facility will not be available until 1995 to 1997.

c. Interim storage will not be used as a substitute for disposal of radioactive waste. All long lived radioactive waste will be sent to an authorized disposal site within one year after a site becomes available to Michigan residents.

3. DESCRIPTION OF INTERIM STORAGE FACILITY -

a. The interim storage room will be located in the lower section of the Parke-Davis parking structure. Pictures and architects drawings are enclosed. The parking structure is a private facility used to provide parking for our employees. It is located on the north east corner of our property. As you can see in the pictures access to the structure is limited by a 30 foot high retaining wall.

Radioactive waste drums will be stored on pallets in the room. The storage room will be lighted and aisles placed every 2 pallet rows to allow easy inspection of waste drums. No environmental monitoring or waste processing system will be located in the room. Electrical service will be provided for lights and a door alarm system.

b. The room will be 29 feet by 54 feet, approximately 1550 square feet. Ceiling height is 8 feet. Twenty percent of the room will be aisle space, 1200 square feet will be available for storing drums. This will provide storage for approximately 500, 55 gallon drums of waste. At 20 drums per year of waste being produces, 20 years of compacted radioactive waste could be stored in the room. Much of the extra space will be used for the short half life decay program.

c. The entire parking structure is made of reinforced concrete. No combustible construction materials are used. Three of the walls will be concrete block construction sealed to the floor and ceiling. The forth wall is an 11 inch steel reinforced concrete wall. The only entrance into the room will be through a double set of steel doors. The ceiling is steel reinforced concrete beams with a 4 inch steel reinforced concrete cap poured in place over the beams. The floor will be steel reinforced concrete. The room is above grade. The surrounding areas are serviced by a storm sewer system to prevent the accumulation of standing water. The floor outside of the room will be sloped away from the storage room. The room is completely weather proof.

d. The two steel doors will be equipped with locks and magnetic alarm switches. Doors will be locked at all time the room is not occupied. An alarm system will notify the security computer at Post 1 when doors are opened. Post 1 is maned 24 hours per day. They have home phone numbers of the RSO. The security truck will drive through the parking structure daily and report any security problems to the security supervisor for action.

e. The room will be equipped with 8, 32 inch by 16 inch block vents to allow for air circulation in the storage room. Since no volatile materials are in the storage room mechanical ventilation is not required.

f. No fire protection system is provided. No open combustibles will be allowed in the room or in the adjoining areas of the parking structure. The building is completely non combustible and all waste is packaged inside steel 55 gallon drums. The concrete block walls and steel doors have a fire rating of 2 hours to prevent fire from entering the room. The Ann Arbor Fire House # 5 is located 1500 meters from our site.

g. The waste packaged in 55 gallon steel drums is not affected by temperatures ranging from -30 degrees to 100 degrees fahrenheit. Humidity changes will not affect the drums.

h. The interim storage area is ideally located for protection from natural and man made disasters. The parking structure is not subject to damage from weather as it is extremely strong and built into the side of a hill. Fire or explosion are not a risk as no other processes are done in the structure and no flammable materials are stored in the structure. Flood is very unlikely as the site is serviced by a storm sewer system that can be seen in the photos. In addition the parking structure is located at the high end of the property. The storm water naturally flows away from the structure.

4. PACKAGING AND CONTAINER INTEGRITY

a. Waste from laboratories will be inspected and then packaged in DOT SPEC. 17H steel drums (55 & 30 gallon). See attachment for specifications. The drum will be lined with a plastic bag before waste is introduced. Drums stored in an enclosed area should last in excess of 20 years. Nothing in our radioactive waste will effect the steel drums.

b. As part of the quarterly radiation safety audits, the storage facility will be inspected. Drums will be examined for visible leakage and rust.

c. No need for repackaging is foreseen. If a problem did occur the waste drum would be brought back into the building and handled in the radioactive waste room. It will be further inspected and repackaged if necessary. The RSO will supervise the transportation of the drum back to the facility. A pallet truck or lift truck will be used to move the drum.

5. RADIATION PROTECTION

a. The majority of our waste has no potential for producing measurable exposure outside of the steel drum. Researchers who may use high level gamma emitter that could produce measurable exposure, such as Na-22, have been instructed to call the RSO directly for pick up of their waste. The RSO determines if waste can be packaged by the service staff or if he should personally package it. No drum exceeding 0.5 millrem per hour exposure at its surface has ever been packaged at this facility. However, if a drum producing significant exposure was introduced in our waste stream the RSO would personally package it and move it to the interim storage.

All drums will be wiped checked for contamination before they are moved to the interim storage area. Drums containing gamma emitters will be surveyed with a geiger counter.

b. The worst case exposure rate would be from a Na-22 gamma emitter. If 5 millicuries of waste were stored at the center of a 55 gallon drum an exposure rate of 6 millrem per hour would be produced 1 meter from the drum. Considering no one will spend more than 1 hour per month in the radioactive waste interim storage room the estimated monthly exposure would be less than 6 millrem per month. No special shielding will be needed.

c. The Ann Arbor Fire department will be notified before any waste is stored in the room. They have already been instructed to use self contained breathing apparatus when responding to any fire at this site. In addition they have detailed site plans and building prints showing where significant quantities of radioactive materials are used and stored.

d. The RSO Office has been using a lotus spread sheet for the last 4 years to track all radioactive waste. The system was inspected during our 5/90 NRC inspection, no problems were noted. The spread sheets have now been expanded to identify where drums are stored and an identification number has been added that shows the date the drum was packaged. Computer back up files are maintained along with a hard copy of all waste records to prevent inadvertent loss.

6. TRAINING

The two service workers who pick up and package radioactive waste are trained by the RSO. They have received training on the information described in section 8.1 and 8.2 and 11 of the license. The RSO has also reviewed the packaging instructions provided by ADCO with each of them.

Two professional staff back up the RSO. Both have masters degrees and have taken a 40 hour radiation safety course. They are both experienced in laboratory uses of radioactive materials. They are available for inspection and emergency response if the RSO is not on site.

7. FINANCIAL ASSURANCE

The financial assurance paper work has been sent to you by our parent company, Warner-Lambert.

8. EMERGENCY RESPONSE

The Parke-Davis Company license limits are far below those listed in table 30.72 Schedule C. No emergency Preparedness plans are required.

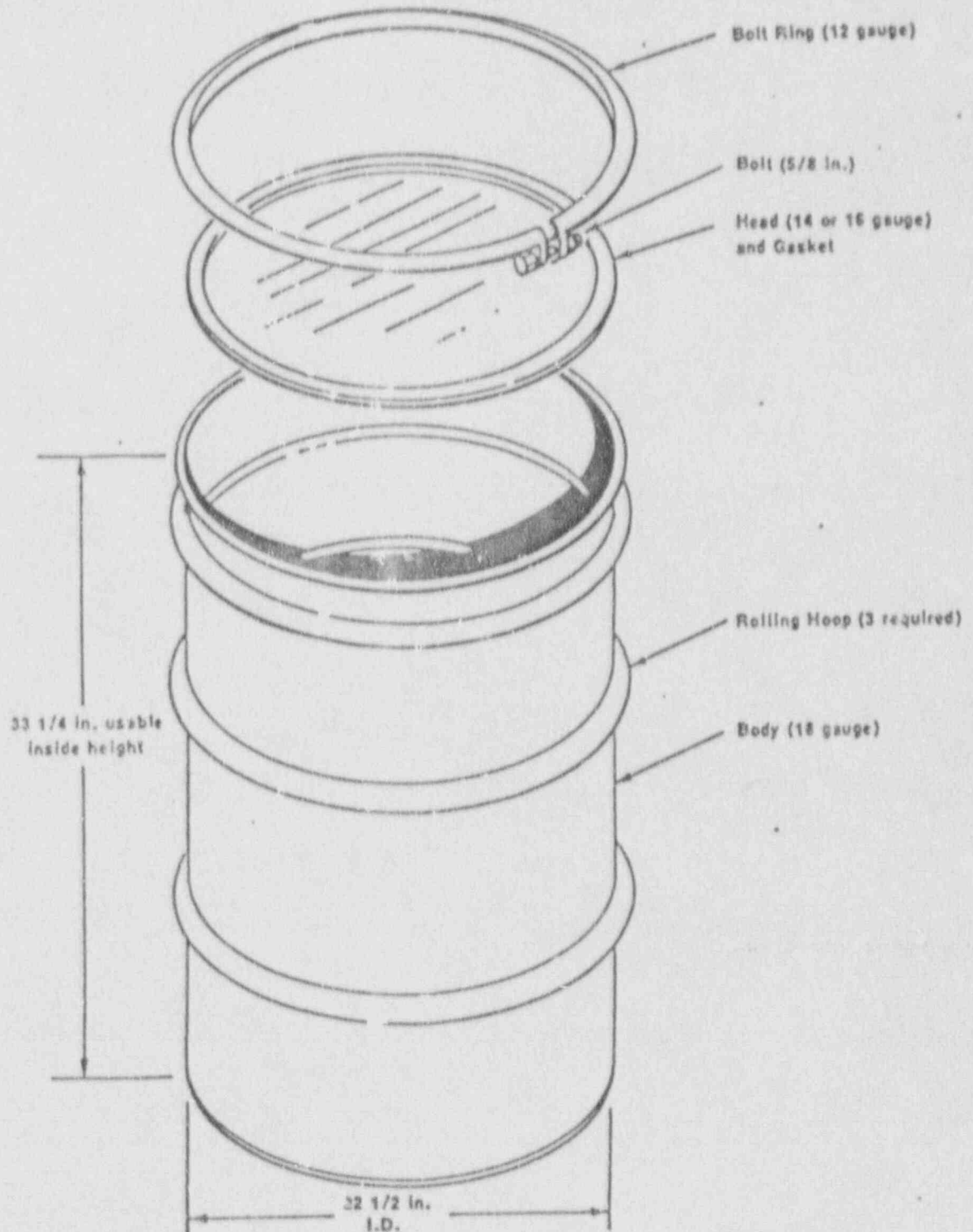
Attachments

1. Architectural Print of Parking Facility and location of Interim Storage Room.
2. Pictures of partially constructed parking structure.
3. List of isotopes and stable daughters.
4. Drum specifications
5. Example of lotus spread sheet for waste records.

Attachment # 3

Isotope	1/2 life	Stable Daughter
H-3	12 y	He-3
C-14	5700 y	N-14
Na-22	2.6 y	Ne-22
P-32	14 d	S-32
S-35	87 d	Cl-35
Ca-45	163 d	Sc-46
Sc-46	83 d	Sc-45
Cr-51	28 d	V-51
Fe59	45 d	Co-59
Ni-63	92 y	Cu-63
Strontium 85	65 d	Rb-85
I-125	60 d	Te-125

DOT SPEC. 17H STEEL DRUM (55 gallon)
(CFR49 § 178.118)



1) Common Name of Container:

Spec 17H 55 Gallon Steel Drum

2) Authorized Contents:

Type "A" quantities of solid radioactive material in normal or special form.

3) Dimensions:

Interior: 22-1/2 in. i.d. x 33-1/4 in. usable inside height

Exterior: 24 in. o.d. x 35 in. outside height

4) Description of Container:

- *55 gal Spec 17H steel drum
- *18 gauge sides and bottom head sheet
- *14 or 16 gauge removable head sheet (16 gauge authorized provided there are one or more corrugations in the cover near the periphery)
- *Gasket (see item 5)

5) Specifications and Restrictions:

- *Authorized Gross Weight - 840 lb
- *Any bulky equipment with sharp corners, protrusions, etc. must be securely positioned within drum.
- *Gasket material must have minimum operating range of -40°F to +130°F. If sponge rubber gasket is used, minimum of 1/2 in. required.

6) Test Results:

<u>Environmental Conditions</u>		
<u>Test</u>	<u>Results</u>	<u>Discussion and/or Reference</u>
a) Heat, +130°F	Pass	Engineering Analysis (EA) - Temperature is within normal operating range for materials of construction.
b) Cold, -40°F	Pass	EA - Temperature is within normal operating range for materials of construction.
c) Reduced Pressure	Pass	"Spec 17H 55 Gallon Steel Drum," Technical Support Document - Type A Study, MLM-2229 (1975).

<u>Test</u>	<u>Results</u>	<u>Discussion and/or Reference</u>
d) Vibration	Pass	Containers have withstood years of transport with no occurrence of significant damage due to normal vibration.

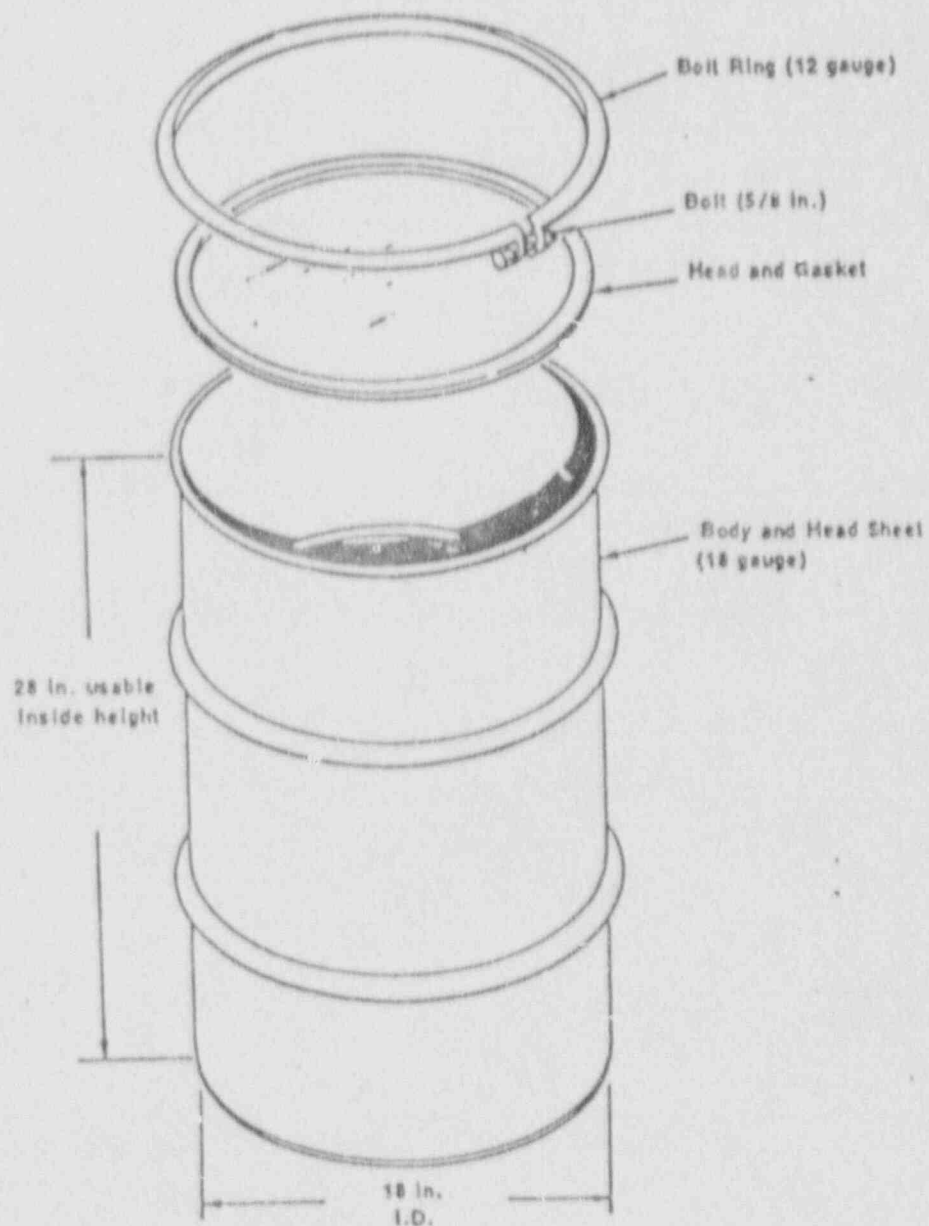
Test Conditions

e) Water Spray	Not Required	CFR49 § 173.398(b)(3)(i)
f) Free Drop (4 ft)	Pass	Tested with 843 lb gross weight. "Spec 17H 55-Gallon Steel Drum," Technical Support Document - Type A Study, MLM-2229 (1975).
g) Corner Drop	Not Required	As long as packages are Fissile Class I or exempt. CFR49 § 173.398(b)(3)(iii)
h) Penetration	Pass	"Spec 17H 55-Gallon Steel Drum," Technical Support Document - Type A Study, MLM-2229 (1975). ORNL-TM-3468, December 1972, page 77.
i) Compression	Pass	Tested with 4600 lb load. "Spec 17H 55-Gallon Steel Drum," Technical Support Document - Type A Study, MLM-2229 (1975).

7) For Additional Information Contact:

D. A. Edling
Monsanto Research Corporation
Mound Laboratory
P. O. Box 32
Miamisburg, Ohio 45342

DOT SPEC. 17H STEEL DRUM (30 gallon)
(CFR49 § 178.118)



1) Common Name of Container:

Spec 17H 30 Gallon Steel Drums

2) Authorized Contents:

Type "A" quantities of solid radioactive material
in normal or special form

3) Dimensions:

Interior - 18 in. i.d. x 28 in. usable inside height

Exterior - 20 in. o.d. x 29-1/2 in. outside height

4) Description of Container:

- 30 gallon Spec. 17H steel drum
- 18 gauge wall, bottom and top head sheet
- Gasket required (see item 5).

5) Specifications and Restrictions:

- Authorized Gross Weight - 500 lb
- Any bulky equipment with sharp corners, protrusions, etc., must be securely positioned within drum.
- Gasket material must have minimum operating range o. -40°F to +130°F. If sponge rubber gaskets are used, minimum of 1/2 in. required.

6) Test Results:

Environmental Conditions

<u>Test</u>	<u>Results</u>	<u>Discussion and/or Reference</u>
a) Heat, +130°F	Pass	Engineering Analysis (EA) - Temperature is within normal operating range for materials of construction.
b) Cold, -40°F	Pass	EA - Temperature is within normal operating range for materials of construction.

<u>Test</u>	<u>Results</u>	<u>Discussion and/or Reference</u>
c) Reduced Pressure	Pass	"Spec 17H 30 Gallon Steel Drum," Technical Support Document - Type A Study, MLM-2229 (1975).
d) Vibration	Pass	Containers have withstood years of transport with no occurrences of significant damage due to nor- mal vibration.

	<u>Test Conditions</u>	
e) Water Spray	Not Required	CFR49 § 173.398(b)(3)(i)
f) Free Drop	Pass	Tested with gross weight of 500 lb. "Spec 17H 30 Gallon Steel Drum," Technical Support Document - Type A Study, MLM-2229 (1975).
g) Corner Drop	Not Required	As long as package is Fissile Class I or exempt. CFR49 § 173.398(b)(3)(iii).
h) Penetration	Pass	EA - Drums of equal gauge have consistently passed this test. ORNL-TM-3468, December 1972, p. 77.
i) Compression	Pass	Tested with 2600 lb "Spec 17H 30 Gallon Steel Drum," Technical Support Document - Type A Study, MLM-2229 (1975).

7) For Additional Information Contact:

D. A. Edling
Monsanto Research Corporation
Mound Laboratory
P. O. Box 32
Miamisburg, Ohio 45342

Sample of compute Results for
walle

$$f(x) = \begin{cases} x^2 \sin \frac{1}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}$$

DRUM ID	DATE	STOR. ID	H-2	C-14	P-32	S-15	CP-51	I-125	OTHER	AMOUNT	TOTAL
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FORM 10	CASE	FROM 10	A-1	C-14	A-21	A-33	CR-31	I-113	OTHER	AMOUNT	TOTAL
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Attachment = 3

isotope	1/2 life	Stable Daughter
H-3	12 y	He-3
C-14	5700 y	N-14
Na-22	2.6 y	Ne-22
P-32	14 d	S-32
S-35	87 d	Cl-35
Ca-45	163 d	Sc-46
Sc-46	83 d	Sc-45
Cr-51	28 d	V-51
Fe59	45 d	Co-59
Ni-63	92 y	Cu-63
Strontium 85	65 d	Rb-85
I-125	60 d	Te-125

MAY 07 1991

Wayne State University
ATTN: Richard D. Cummings, M.S.
Health Physics-Radiation Control
645 Mullett
Detroit, MI 48226

Gentlemen:

Enclosed is Amendment No. 32 to your NRC License No. 21-00741-08 in accordance with your request.

Based on telecom with Mr. Jim Barrows May 3, 1991 and John D. Jones of our staff, it is our understanding that you will not store mixed waste, or biologic/pathogenic waste in your facility and that you have determined that no additional permits are required for the facility.

Please note that this amendment provides for interim storage of waste ending December 31, 1995. This date is based on the fact that the final milestone of the Low-Level Radioactive Waste Policy Amendments Act of 1985 is to be in place on or before January 1, 1996. Should you need an extension for storage beyond December 31, 1995, for any reason including failure of your state or regional compact to provide for LLW disposal generated in your state, you will need to reapply prior to that milestone deadline.

After review of your license we have determined that you have submitted certification of financial assurance as described in 10 CFR 30.35 (enclosed). However, this does not relieve you of record keeping requirements relative to information which the Commission considers important to decommissioning. Therefore, we have added license Condition 20. requiring that you maintain such records as set forth in Section 30.35(g).

Please review the enclosed document carefully and be sure that you understand all conditions. You must conduct your program involving radioactive 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. Possess radioactive material only in the quantity and form indicated in your license.
3. Use radioactive material only for the purpose(s) indicated in your license.
4. Notify NRC in writing of any change in mailing address.

A13

9105200329 app

5. Request and obtain appropriate amendment if you plan to change ownership of your organization, change locations of radioactive material, or make any other changes in your facility or program which are contrary to your license conditions or representations made in your license application and any supplemental correspondence with NRC. Any amendment request should be accompanied by the appropriate fee specified in 10 CFR Part - 170.
6. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date on your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of radioactive material after your license expires is a violation of NRC regulations.
7. Request termination of your license if you plan to permanently discontinue activities involving radioactive material prior to your expiration date.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations in your license application will result in enforcement action against you in accordance with the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C.

If you have any questions or require clarification of any of the above stated information, contact us at (708)790-5625.

Sincerely,

Original Signed By
John D. Jones
Materials Licensing Section

Enclosure(s):

1. Amendment No. 32
2. 10 CFR Part 30

RIII

jdj
jdjones
05/07/91

CONVERS. ON RECORD

TIME

DATE

08:50am May 3, 1991

☐ VISIT☐ CONFERENCE☒ TELEPHONE☐ INCOMING☒ OUTGOING

NAME OF PERSON(S) CONTACTED OR IN CONTACT

ORGANIZATION (OFFICE, DEPT., ETC.)

TELEPHONE NO.

Jim Barrows Assistant RSO Wayne State University

313-577-1213

SUBJECT

Amendment request c/n 91302 interim storage of LLRW.

SUMMARY

Identification of Waste to be Stored

I pointed out that the letter (Item B.1.) indicates that you wish to store all forms of LLRW. The implication of this statement is that you will be storing "mixed waste" Please characterize additional non-radiological properties of your waste hazardous, biologic/pathogenic, corrosive, flammable, etc. and describe how you will insure integrity of packaging, provide procedures for determination of any problems that arise due to failure of packaging and provide procedures for repackaging.

Mr. Barrows and I went over the characteristics of mixed waste using the EPA RCRA Orientation Manual 1990 edition. It was concluded that no mixed waste would be involved in the storage facility. He stated that no additional permits were required for the storage facility.

ACTION REQUIRED

None

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

John D. Jones

ACTION TAKEN

SIGNATURE

TITLE

DATE



Wayne State University

April 3, 1991

Health Physics-Radiation Control
645 Mullett
Detroit, Michigan 48226

Mr. John Jones
U.S. Nuclear Regulatory Commission
Licensing Division
Region III
799 Roosevelt Rd.
Glen Ellyn, IL 60137

Dear Mr. Jones:

Re: License Amendment of Wayne State University's
By-Product Material License #21-00741-08 for
Extended Interim Storage of Low-Level Radio-
active Waste (LLRW)

This letter serves to request a license amendment for Wayne State University, Detroit, MI 48226 of By-Product Material License #21-00741-08 to allow for extended interim storage of LLRW materials.

The attached documentation identifies and addresses the information needed for this license amendment request. Nuclear Regulatory Commission Information Notice No. 90-09 was used as a guideline in addressing issues for extended interim storage of LLRW at Wayne State.

If you desire any further information regarding this license amendment request, please feel free to contact me at (313)577-1255.

Sincerely,

Richard D. Cummings
Richard D. Cummings, M.S.
Radiation Safety Officer
Director, Health Physics-Radiation Control
Wayne State University
645 Mullett
Detroit, MI 48226

RDC/ab
Attachment

pc: G. Heberlein
D. Walz

RECEIVED
APR 12 1991
11:29 AM
HEALTH PHYSICS-RADIATION CONTROL

april 11
FEE EXEMPT
170.11(a)(1)

RECEIVED
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REGION III
01200

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CONTROL NO

Background Information:

Michigan has been selected as the host state for the Midwest Compact for LLRW which includes the member states of Iowa, Indiana, Minnesota, Missouri, Ohio and Wisconsin. Unfortunately, due to a number of reasons, Michigan will not have a LLRW disposal facility up and operating by the milestone deadline of December 31, 1995. In fact, it is foreseeable Michigan may not have a facility until the year 2000.

Currently, Michigan generated LLRW materials can not be disposed at the sited facilities located in Richland, Washington; Beatty, Nevada; and Barnwell, South Carolina. Consequently, Michigan generators face no other alternative than to store LLRW Materials on an interim basis until access is allowed at a disposal site. Therefore, the need for extended interim storage at Wayne State.

Physical Description of LLRW Facility:

A Wayne State University owned LLRW storage and processing facility was designed and renovated for the exclusive sole use by the Health Physics Department. This renovated facility is located at 6000 Cass Avenue, Detroit, MI and slightly off-set from main campus. The facility is a single story, above grade masonry structure designed for long term extended storage of LLRW materials and sealed sources owned by the University or on loan from Federal agencies. The entire facility is equipped with a new fire suppression system that complies with the latest national and local fire codes and is also equipped with heating and air conditioning to control the environment.

Facility Security and Surveillance:

Health Physics personnel will be in the area on a daily basis and routine surveys of the area will be performed on a regularly scheduled basis.

This facility has been designated as a special attention area by Wayne State's Public Safety Department. The external premises of the facility will be checked by Public Safety Officers when the University is closed. All Watch Commanders and Dispatchers have been provided with home phone numbers of key Health Physics personnel and given specific instructions regarding actions to be taken in any emergency until Health Physics personnel can respond. Also, two fire stations of the Detroit Fire Department that would respond to an alarm at the facility have been given instructions as well as home phone numbers of key Health Physics personnel.

Other Hazards:

With regards to vulnerability to other hazards, hurricanes do not occur in this geographical location and tornados are a rare occurrence and do not, as a rule, strike large cities such as Detroit. The city of Detroit is not prone to flooding and there are no industrial facilities within a mile of the facility.

Processing and Container Integrity:

Waste will be processed in approved 17H or 17E D.O.T. spec. drums and packaged and monitored in a form ready for transport and disposal, whenever a site will accept the waste. Waste processed in these containers have not and should not present any threat to the integrity of the drum. The projected storage life of the containers is indefinite.

Drums will be clearly labeled in accordance with 10CFR20.203 (f) and 20.311. Storage of the processed containers will be in the main storage Area A (see attached floor plan) and if necessary, in the auxiliary storage Area B as well as in the liquid processing and storage Area C. All low-level sealed sources will be stored away from processed containers and in a separate lead-lined maze, Area D, with locking door.

A. Area Designations:

1. Area A - Area A has approximately 2,000 square feet of floor space and can accommodate roughly 400 fifty-five gallon drums, single layer. This sectioned area will be utilized for processing, labeling, monitoring and first generation storage.
2. Area B - Area B has approximately 500 square feet of floor space and can accommodate an additional 100 fifty-five gallon drums, single layer. This area will be primarily used for supplies storage and will be utilized for processed drums only if the need arises.
3. Area C - Area C will be used for liquid waste processing and interim storage for decay of liquid wastes containing isotopes with half-lives equal to or less than 60 days. This area is equipped with an air handling system utilizing a fume hood equipped with a HEPA and activated charcoal filters. Filtered air is vented to the roof top for release into the air. The door leading to this storage area is locked when not in use.
4. Area D - Area D will be used strictly for sealed source storage. This area is designed in a maze configuration with lead lined walls. The door leading to this storage area is locked when not in use.

The remainder of the facility will be utilized for office space as well as an instrumentation laboratory for sample analysis.

B. Identification Of Waste To Be Stored:

1. Wastes to be stored on an extended interim basis will primarily be solid but may include liquid and scintillation vials. Currently, we are processing liquids and scintillation vials and disposing of same via a commercially licensed waste facility. However, this license amendment request includes all forms of LLRW waste.
2. A review of Wayne State's possession limits indicates a need for an increase of three (3) isotopes as listed below in any chemical and/or physical form:

<u>Isotope</u>	<u>Current Possession Limit</u>	<u>Requested Possession Limit</u>
Cr-51	100 mCi	300 mCi
I-125	500 mCi	750 mCi
S-35	400 mCi	600 mCi

It should be noted that all volume of waste is Class A.

3. It is anticipated that the estimated maximum amount of LLRW to be stored up to and including December 31, 1995 (assuming continued access to disposal for liquid and scintillation materials) is as follows:

<u>Solid</u>	<u>Liquid & Scintillation Vials</u>
600 - 55 gal. drums for total of 4,500 ft ³	135 - 55 gal. drums for total of 1,000 ft ³

∴ total of approximately 735 drums for the 5 year period

The anticipated breakdown by isotope is as follows:

<u>Isotope</u>	<u>mCi Amount/year</u>	<u>mCi Amount for 5 Years</u>
C-14	100.0	500.0
Ca-45	10.0	50.0
Cr-51	40.0	200.0
H-3	300.0	1500.0
I-125	150.0	750.0
P-32	100.0	500.0
S-35	100.0	500.0
All other	20.0	100.0

C. Radiation Protection:

All radiation protection procedures will be conducted in accordance with Wayne State's Health Physics Manual and which is on file with the N.R.C.

All personnel working in the facility will be badged with monthly processing. Past experience in handling the LLRW as well as personnel monitoring record reviews indicate that all exposures should be minimal in maintaining our policy of ALARA.

Posting of the area will be in accordance with 10CFR Section 20.203 and periodic radiation and contamination surveys of the storage area will be conducted. All containers are monitored and wipe tested for contamination at the time of packaging and before being placed in extended storage.

Lastly, to assure accountability, all generators of radioactive waste are required to furnish Health Physics with specific information about their LLRW waste. Information must include isotope, amount and assay date. A collection of this information per packaged drum is then assimilated and placed on a Record Shipment form to be presented to the sited facility for ultimate disposal as well as a copy kept on file in the Health Physics Department.

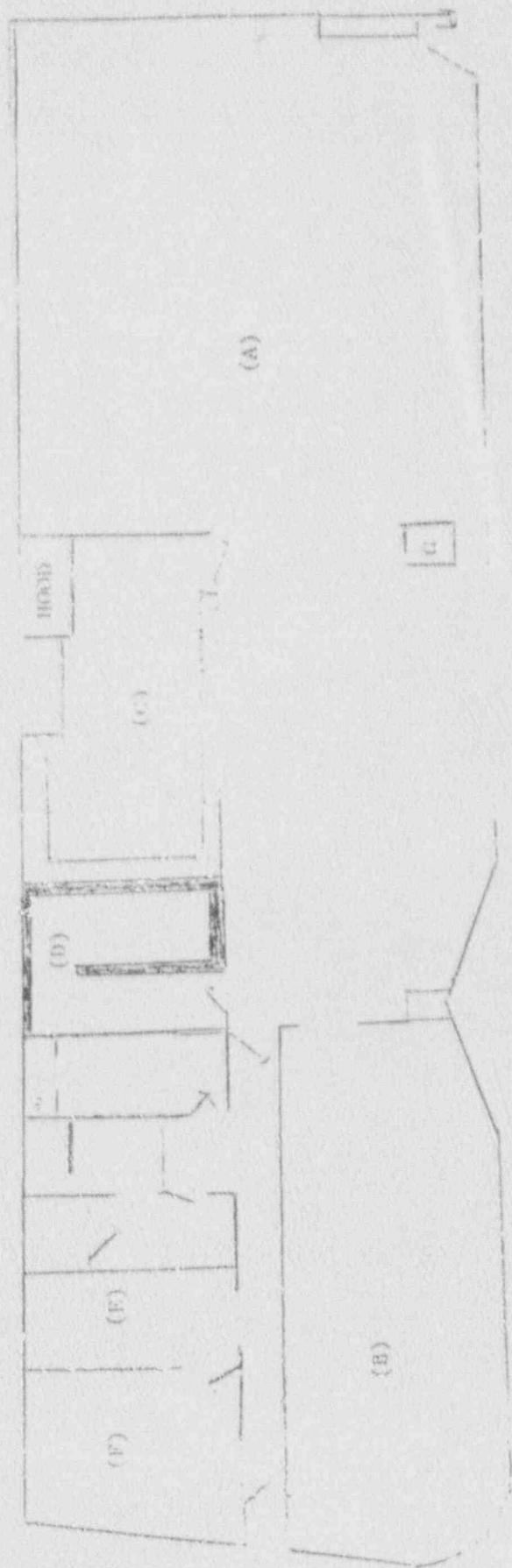
D. Training:

All Health Physics personnel have been trained in the packaging, handling, placement, inspection and surveillance of drums as well as handling emergencies. Procedures and emergencies are followed in accordance with the referenced Health Physics Manual.

E. Financial Assurance:

Financial assurance documentation for decommissioning has been previously submitted and on file with the N.R.C. to demonstrate that financial resources will be available. In addition, resources will be available for the cost of handling, transport and ultimate disposal of all LLRW stored on site.

Wayne State University
 LRM Storage and Processing Facility
 6000 Cass Avenue
 Detroit, Michigan



- Area A: Main storage area, 2,000 square feet
- Area B: Auxiliary storage 500 square feet
- Area C: Liquid waste processing and storage
- Area D: Liquid waste area
- Area E: Instrumentation laboratory
- Area F: Office
- C: Computer