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Robert Lowenstein, Attorney
Office of the General Counsel

James R. Mason, Chief, Isotopes Branch
Division of Licensing and Regulation

FEDERAL REGISTER NOTICE

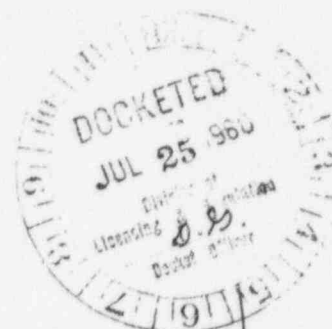
SYMBOL: L&R:IB:WSC

Attached are a signed original and eight copies of Federal
Register notice, as follows:

"DOCKET NO. 27-7, ISOTOPES SPECIALTIES COMPANY, DIVISION OF
NUCLEAR CORPORATION OF AMERICA, INC., NOTICE OF ISSUANCE
OF AN AMENDMENT TO BYPRODUCT, SOURCE AND SPECIAL NUCLEAR
MATERIAL LICENSE"

Also attached, for your signature, are the required number
of copies of letter of transmittal to the Federal Register,
with additional copies for internal distribution.

Attachments:
As stated above



OFFICE ▶	L&R:IB	L&R:IB			
SURNAME ▶	<i>WC</i> Cool:dg	<i>Mason</i> Mason			
DATE ▶	7/ /60	7/19/60			

Form AEC-313 (5-58)	ATOMIC ENERGY COMMISSION APPLICATION FOR BYPRODUCT MATERIAL LICENSE		Form approved Budget Bureau No. 38-R927.4
<p>INSTRUCTIONS.—Complete Items 1 through 16 if this is an initial application. If application is for renewal of a license, complete only Items 1 through 7 and indicate new information or changes in the program as requested in Items 8 through 15. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail three copies to: U. S. Atomic Energy Commission, Washington 25, D. C. Attention: Isotopes Branch, Division of Licensing and Regulation. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30 and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20.</p>			
<p>1. (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital, person, etc.)</p> <p>Isotopes Specialties Company A Division of Nuclear Corporation of America. 170 W. Providentia, Burbank, Calif.</p>		<p>(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. (If different from 1 (a).)</p>	
<p>DEPARTMENT TO USE BYPRODUCT MATERIAL</p> <p>Radioactive Waste Disposal Department</p>		<p>3. PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate with this number.)</p> <p>Renewal of license 14-580-6 and amendments thereto.</p>	
<p>4. INDIVIDUAL USER(S). (Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in Items 8 and 9.)</p> <p>Isotope Committee A. J. Moses, Chairman</p>		<p>5. RADIATION PROTECTION OFFICER (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)</p> <p>J. D. Vaden, Health Physics Officer</p>	
<p>6. (a) BYPRODUCT MATERIAL. (Elements and mass number of each.)</p> <p>Any Byproduct Material having Atomic No's. between 3 and 83 inclusive.</p> <p>Source Material</p> <p>Special Nuclear Material.</p>		<p>(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. (If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)</p> <p>Any form. 500 curies maximum.</p> <p>2000 pounds of Uranium or Thorium or any combination thereof.</p> <p>100 grams.</p>	
<p>7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. (If byproduct material is for human use, Supplement A (Form AEC-313a) must be completed in lieu of this form. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)</p> <p>SEE ATTACHED SUPPLEMENT "A".</p> <div data-bbox="1191 1634 1521 1959" style="text-align: right;"> </div>			

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Form AEC-313 (5-58)

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

B TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a Principles and practices of radiation protection			Yes No	Yes No
b Radioactivity measurement, standardization and monitoring techniques and instruments			Yes No	Yes No
c Mathematics and calculations basic to the use and measurement of radioactivity			Yes No	Yes No
d Biological effects of radiation			Yes No	Yes No

9 EXPERIENCE WITH RADIATION (Actual use of radioisotopes or equivalent experience)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE

10 RADIATION DETECTION INSTRUMENTS (Use supplemental sheets if necessary)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mR/hr)	WINDOW THICKNESS (mg/cm ²)	USE (Monitoring, surveying, measuring)

11 METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE

12 FILM BADGES, DOSIMETERS, AND BIO ASSAY PROCEDURES USED (For film badges, specify method of calibrating and processing, or name of supplier)

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13 FACILITIES AND EQUIPMENT Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached (Circle answer) (Yes) No **SEE DRAWING "A"**

14 RADIATION PROTECTION PROGRAM Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source **SEE SUPPLEMENT "B"**

15 WASTE DISPOSAL If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved **SEE SUPPLEMENT "B"**

CERTIFICATE (This item must be completed by applicant)

16 THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1 CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PART 30; AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF

Date **7-25-60**

By **Dr. Kenneth W. Newman**
General Manager
Title of certifying official

Enclosed Supplies Co., a Div. of Nuclear Corporation of America
Applicant named in item 1

WARNING.—18 U. S. C., Section 1001, Act of June 25, 1948, 62 Stat. 749, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

NUCLEAR CORPORATION OF AMERICA

isotopes specialties company
-- division --

DOCKET NO. 27-7

victoria 9-2273

170 west providencia
burbank, california
July 25, 1960

SUPPLEMENT "A"

APPLICATION FOR RENEWAL
OF BYPRODUCT MATERIAL LICENSE NO. 4-580-6

The byproduct material, source material, and special nuclear material in the quantities and as described in Item 6(a) and 6(b) of "Application for Byproduct Material License" dated July 25, 1960, are those materials which are either now on hand or which may be accumulated during the next 21 - 24 months as waste.

These quantities reflect requested increases over those amounts previously permitted by the AEC for the following reasons:

1. Increase of Special Nuclear Material
From 10 grams to 100 grams

This Company now contemplates work involving fuel elements, potential waste disposal customers have waste containing more than 10 grams of special nuclear material, and thus we must be covered on our license to successfully bid.

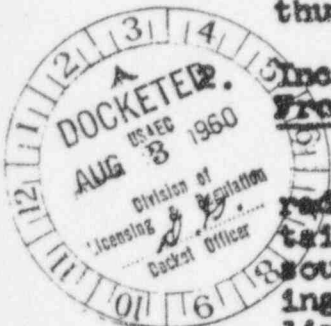
2. Increase of Byproduct Material
From 100 curies to 500 curies

We now carry on our inventory encapsulated sources of radioactivity which cannot be re-used economically. To maintain a workable inventory, it is necessary to dispose of these sources, and as some of them are long-lived isotopes containing as much as 300 curies of material, an increase in the waste limit for byproduct material is needed.

This waste radioactive material is to be disposed of in any of the following ways:

1. By transfer to any radioisotope user who is licensed by the AEC for the type and quantity of the radioactive content of the waste.
2. To sea site 32° 00'N.; 121° 30'W., or other sea locations when approved by the AEC.
3. To landsites now approved by the AEC, or other landsites which may be approved.

The radioactive waste will be stored, processed, and packaged for disposal and/or may be reclaimed and used. If reclaimed or used, it will be added to inventory covered by License 4-580-7.



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100	100

House

Yard

House

8

(R)

DOCKET NO.

27-7

G

Yard (B)

House

House

Yard (A)

(C)

(I.)

Manufacturing

ISC

Shop and

Office

House

House

Scale: 1" = 50'

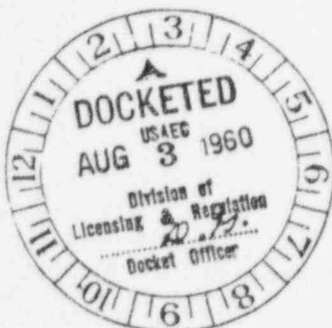
Note: Areas marked (N), (C), and (L) are locations where waste is processed and/or stored. (R) is reserve storage area. Yard (A) serves as packaging and container make-up area. Yards (B) and (A) are used for transit storage of packaged waste pending shipment.

Parking

Providencia Avenue

DRAWING "A"

All fencing is 6' chain link
with 8 strands barbed wire
on top. H



The lines demarking the property are the administrative restricted area limits. The Company policy is that only persons having legitimate business with the Company are allowed to enter this property. Any person visiting the Company who may enter areas where radiation levels are 2 millirems per hour or above is required to register and wear a film badge.

Isotopes specialties company
-- division --

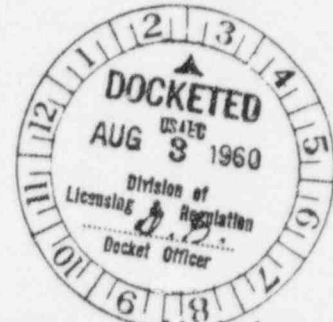
DOCKET NO. 27-7

victoria 9-2273

170 west providencia
burbank, california
July 25, 1960
refer 4-580-6

SUPPLEMENT "B"

ADMINISTRATIVE PROCEDURE
FOR
THE DISPOSAL OF RADIOACTIVE WASTE



1. General Administration

The Isotope Committee of Isotopes Specialties Company, a division of Nuclear Corporation of America, shall be the final authority on all matters pertaining to the collection, logging, storage, processing and disposal of all byproduct, source and special nuclear material wastes. The Isotope Committee is composed of the following individuals:

A. J. Moses, Chairman	A. Seibel
L. W. Watterau	J. C. Leak
K. W. Newman	J. D. Vaden, Secretary

The members of the Isotope Committee are qualified by reasons of training and experience and familiarity with facilities and equipment, to use radioactive materials. Thus, the members of the Isotope Committee are qualified to transfer and package radioactive waste. Other similarly qualified personnel in the company may be authorized on occasion by the Isotope Committee to engage in radioactive waste operations.

II. Collection of Radioactive Waste

A. Radioactive waste collected by Isotopes Specialties from Customers:

1. When waste containers are furnished by Isotopes Specialties Company they will be made of metal with metal lids which can be closed. The capacity of these containers will be as required by the customer, with a maximum size of approximately 55 gallons. Radioactive waste shall be loaded so that radiation will not exceed 200 milliroentgens per hour at the surface of the container.
2. Before pickup of customer waste containers (or ISC furnished containers) the container will be monitored for penetrating radiation, for leakage and proper sealing. In the event that the inspection of the waste container reveals conditions in violation of ICC regulations for the shipment of radioactive waste, the waste container will be contained in exterior packaging or repackaged so that it will conform to ICC regulations for the shipment of radioactive waste.

NUCLEAR CORPORATION OF AMERICA

isotopes specialties company
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DOCKET NO. 27-7

ADMINISTRATIVE PROCEDURE FOR
THE DISPOSAL OF RADIOACTIVE WASTE (cont'd)

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SUPPLEMENT "B"

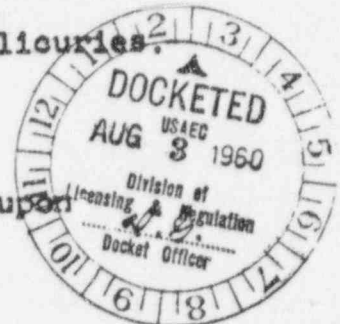
3. The customer will be asked for information regarding:

Identification of the radioactive material.
Volume of radioactive waste.
Amount of activity in terms of millicuries present
in the waste.

4. Radioactive waste received by ISC from customers shall
be logged as follows:

- a. Intensity of radiation at surface of container.
- b. Volume of waste.
- c. Activity of radioactive materials in millicuries.
- d. Identity of radioactive material.
- e. Condition and number of containers.
- f. Under the name of the customer

Note: Items (c) and (d) above will be based upon
customer information.



III. Storage of Radioactive Waste

- A. Radioactive waste shall be stored in the containers in which it is shipped to ISC until time for processing for disposal.
- B. Radioactive waste shall be stored in designated buildings or areas, posted with proper radiation warning signs, that are secured by locked doors or gates. Outside storage areas are protected with six foot high fences topped with barbed wire and locked gates. Additional protection is afforded by a six foot high fence topped with barbed wire which surrounds the entire plant, and gates that are locked nightly.
- C. Radioactive waste shall be stored so that the radiation level at the outermost boundary of the company property shall not exceed 2 milliroentgens per hour.

IV. Processing and Packaging of Radioactive Waste for Disposal

- A. Processes which may be used in radioactive waste treatment include: physical compaction; segregation in regards to activity level; chemical dissolution; filtration; extraction; ionexchange; chemical polymerization and physical absorption.
- B. Packaging of radioactive waste entails the placing of processed or unprocessed waste into waste containers.

ADMINISTRATIVE PROCEDURE FOR
THE DISPOSAL OF RADIOACTIVE WASTE (cont'd)

SUPPLEMENT "B"

V. Deposition of Radioactive Waste

- A. To AEC approved land burial sites.
- B. To an AEC licensed user or disposal agency.
- C. To AEC approved sea sites.

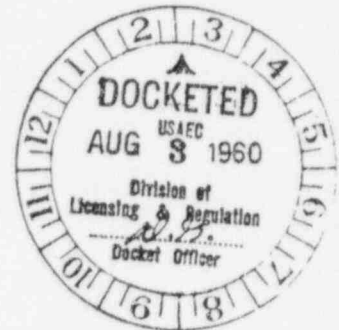
VI. Radioactive Waste Containers

- A. Containers used for radioactive waste shall meet ICC specifications when waste is shipped to land sites for deposition.
- B. Containers used for radioactive waste shall meet ICC specifications when waste is going to sea sites for deposition, or shall be packaged in containers described as follows:

1. General Conditions

- a. All radioactive waste will be packaged so that the radiation level at the surface of the container will not exceed 200 milliroentgens per hour and 10 milliroentgens per hour at the distance of one meter.
- b. All radioactive waste containers will be labeled with the following information:
 NUCOR- ISC
 Date of packaging
 Total amount of activity
 Log reference number
 The most hazardous isotope
- c. Each container will have a minimum density of 10 lbs. per gallon of capacity.
- d. The standard waste container for sea disposal will be the conventional 55 gallon steel drums. Radioactive waste will be packaged for sea disposal in the drum by use of one of the following methods:

Solid waste will be put into the drum in increments of 4" to 6". A slurry of cement will be carefully added to each incremental layer of waste to produce a solid mass. This type filling will be conducted to within approximately 5" of the drum top. Layers so added will not be allowed to set up before adding the next layer. At this point the filling will stop and the poured material allowed to become firm. The drum filling will be completed with concrete.



isotopes specialties company
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ADMINISTRATIVE PROCEDURE FOR
THE DISPOSAL OF RADIOACTIVE WASTE (cont'd)

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SUPPLEMENT "B"

Liquid radioactive waste may also be filled into this drum in a similar fashion, i.e., by mixing with cement slurry and allowing the whole mass to solidify.

Closure of the drum will be a 3" to 5" layer of cement and, in addition, a ring bolt closure may be used.

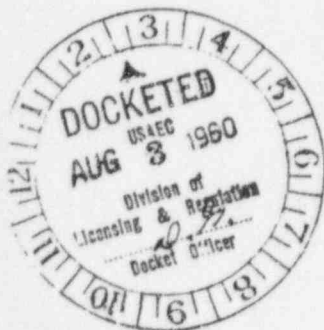
Certain levels of activity may require extra shielding within the 55 gallon container. This will be done as follows:

Liquid concrete will be poured into the bottom of the drum and around a cylindrical form of approximately 10 gallon capacity which will be placed in the approximate center of the drum. This will provide a cylindrical void with not less than 6" of solid concrete between the outer edges of this cylindrical void and the inner drum wall. The cylindrical void shall extend to within 3" to 6" of the top of the drum.

Solid and/or liquid waste will be slurried with concrete into the center of the void. This fill shall not be completed to within more than 5" of the drum top. The center core will be allowed to set and the remaining space, approximately 5", will be filled with solid concrete to provide a sealing plug.

In the case of the drum with the shielded cavity, reinforcing steel will be used to strengthen the concrete wall between the cavity and the inner drum wall. This reinforcement may take one of two forms; a cylindrical configuration with a bottom and cap to surround the inner cavity made of welded wire mesh, which will have from 1" x 1" to 6" x 6" openings dependent on the gauge of the wire used which may vary from 16 to 10 or larger; or, reinforcing steel rods 3/8" diameter welded to both an inner metal container, which forms the cavity, and the outer 55 gallon metal drum.

In all slurry and concrete filling operations agitation, vibration and careful pouring will be utilized to insure a homogeneous fill. A crimped metal tube will be inserted into all containers having cavities with the crimped end in the cavity and the open end above the sealing concrete plug.



isotopes specialties company
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ADMINISTRATIVE PROCEDURE FOR
THE DISPOSAL OF RADIOACTIVE WASTE (cont'd)

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SUPPLEMENT "B"

e. Special Waste Containers

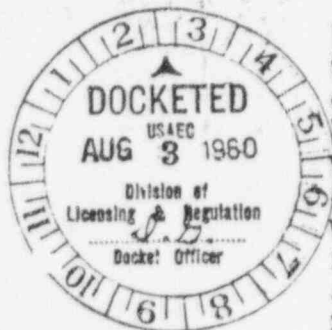
Master Drum Container - This describes a container to be used with a 55 gallon drum in the center. In addition, the total cubic content of this container may be used for waste disposal as described here.

Drawing D-0049 depicts this container (non-scale). It is a $1/8$ " steel shell, 46" in diameter at the top and bottom, and approximately 60" in diameter across the midsection. It is 46" high and is a 280 gallon capacity.

A steel lifting half ring of $1\ 3/4$ " diameter rod is welded to a 7" diameter plate. This plate, in turn, is welded to the container side at approximately the half-way point between top and bottom of the container. To the inside center of this plate is welded a $1\ 1/2$ " diameter steel bar which projects 12" into the interior of the container. When this container is filled as here described, this inner projecting bar is securely anchored in solid concrete and provides additional holding strength for the lift ring.

Use - A layer of concrete approximately 6" to 12" thick will be poured into the bottom of the container. A conventional steel 55 gallon drum will be placed on the bottom concrete approximately centered in respect to the walls of the container. The top of this drum will be approximately 6" to 12" below the container top. Concrete will then be poured into the annular space between the inner 55 gallon drum and the outer walls of the container. A minimum annular wall thickness of 12" of concrete will result. Solid or liquid waste will then be placed into the center drum exactly as described for the 55 gallon drum packaging technique. When this center drum is filled a top plug, of approximately 6" to 12" thickness of concrete will be poured to complete the fill.

This container may also be used as a general container for radioactive waste slurried with concrete, but utilizing the entire cubic content of the container instead of only a center cylinder. In this case, the following procedure will be used. Solid and liquid waste will be placed in the drum in incremental layers of 4" to 10". Concrete slurry will then be added. This procedure will be completed to a point within 6" of the top of the container.



NUCLEAR CORPORATION OF AMERICA

isotopes specialties company
-- division --

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ADMINISTRATIVE PROCEDURE FOR
THE DISPOSAL OF RADIOACTIVE WASTE (cont'd)

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SUPPLEMENT "B"

When the master drum container utilizes a cavity, this cavity will be surrounded with a cylindrical cage, having a top and bottom, made of $3/8$ " reinforcing bar with a grid size of from 10" x 10" to 12" x 12". The reinforcing steel will be located 6" to 10" from the inside wall of the outer container. A crimped metal tube will be inserted into the cavity with its open end exposed above the concrete cap.

Other special containers may be used dependent on the shape, toxicity and intensity of radiation of the waste such as shown in drawings D-0047 and D-0048.

The waste containers described in these procedures have been approved by the Atomic Energy Commission and the referenced drawings are on file with the commission.

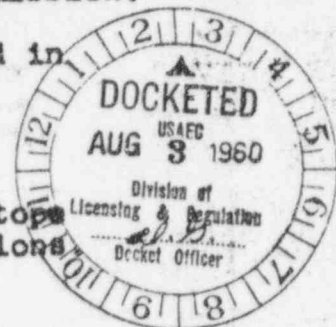
VII. Safety and Operational Instructions to Personnel Involved in Radioactive Waste Functions.

A. Qualifications

1. Only those plant personnel authorized by the Isotope Committee can engage in radioactive waste operations.

B. Personnel Protection

1. All personnel engaged in radioactive waste operations shall be given a copy of these administrative instructions and shall be held responsible for the knowledge of the contents therein.
2. All personnel shall wear personal monitoring devices such as film badges or dosimeters or both and shall have a radiation monitoring instrument on hand dependent on the type and activity of the radioactive waste handled and the recommendations of a member of the Isotope Committee.
3. Protective clothing such as coveralls, lab coats, shoe covers, hats, face shields, respirators, gloves, etc. shall be worn by personnel engaged in radioactive waste operations when in their opinion or the opinion of a member of the Isotope Committee such protective clothing is warranted.
4. In all radioactive waste operations one person shall be designated by two or more members of the Isotope Committee as the person in charge and shall be responsible to the



ADMINISTRATIVE PROCEDURE FOR
THE DISPOSAL OF RADIOACTIVE WASTE (cont'd)Page 7
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Isotope Committee for carrying out the proper packaging, transportation, handling, labeling and logging of the radioactive waste as prescribed in these administrative procedures.

VIII. Transportation

A. Radioactive waste carried by ISC vehicles.

1. Shall be accompanied by a qualified person with a radiation survey instrument.
2. The exterior surfaces of the truck bed shall not exceed 200 milliroentgens per hour.

B. Radioactive waste disposal to sea by ISC.

1. Truck shipments to the dock and barge shipments to sea sites shall be accompanied or escorted by a qualified person with a radiation survey instrument.
2. The exterior surface of the truck bed shall not exceed 200 milliroentgens per hour.
3. Truck drivers, stevedores and other persons handling the radioactive waste shipment shall be provided with film badges and shall be protected from excessive radiation exposure by a qualified person from ISC.

C. Actions to be taken by the monitor when emergencies occur during transportation of radioactive waste.

1. Immediately ascertain whether or not a potential radiation hazard exists.
2. Take positive action to prevent the spread of radiation contamination and to prevent exposure of the general public to radiation.
3. Send some other person to contact a member of the Isotope Committee but do not leave the vehicle unguarded.

Do not hesitate in calling on civil authorities when their aid or cooperation is needed.

The informed member of the Isotope Committee will notify any and all public agencies as may be required by law.

