NINE MILE POINT NUCLEAR STATION

WASTE HANDLING PROCEDURE

PROCEDURE NO. N1-WHP-8

VAN SHIPMENT PREPARATION PROCEDURE

FOR INFORMATION ONLY

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Summary of Pages

NIAGARA MOHAWK POWER CORPORATION

THIS PROCEDURE NOT TO BE USED AFTER April 1983, SUBJECT TO PERIODIC REVIEW.

VAN SHIPMENT PREPARATION PROCEDURE

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VAN SHIPMENT PREPARATION

1.0 PURPOSE AND SCOPE

The purpose of this procedure is to identify the steps required to prepare a loaded radwaste van for offsite shipment. Preparation for shipment includes items such as surveying, closure and sealing, labeling and placarding, and documentation. Adherence to this procedure will ensure that shipments of radioactive waste are in compliance with applicable regulations of the NRC, DOT and Agreement States.

2.0 TECHNICAL SPECIFICATION REQUIREMENTS

None

3.0 REGULATORY REQUIREMENTS

3.1 Refer to 10CFR71 for NRC requirements.

3.2 Refer to the following sections of 49CFR for DOT requirements: 40CFR 172, 173, 177, 178.

3.3 Refer to appropriate Burial Site Requirements for Disposal Criteria.

4.0 DEFINITIONS

4.1 Radioactive Material, 173.389*

Radioactive material is any material, or combination of materials, which spontaneously emits ionizing radiation. Materials in which the estimated specific activity is not greater than 0.002 microcuries per gram of material, and in which the radioactivity is essentially uniformly distributed are not considered to be radioactive materials.

Special form radioactive materials are those which, if released from a package, might present some direct radiation hazard but would present little hazard due to radiotoxicity and little possibility of contamination. This may be the result of inherent properties of the material (such as metals or alloys) or acquired characteristics, as through encapsulation. The criteria for determing whether a material meets the definition of special form are prescribed in paragraph 173.398(a).

*Refers to applicable sections of 49CFR (DOT).

4.2 Type A and B Quantities, 173.389(1)

Type A and Type B are defined as aggregate quantities of radioactivity which do not exceed the following for Normal Form materials:

Transport Group	Type A Curies	Type B Curies
I	0.001	20
II	0.05	20
III	3	200
IV	20	200
V	20	5000
VI, VII	1000	50000
For Special Form Materials	20	5000

4.3 Large Quantity Radioactive Materials, 173.389(b)

Large quantity radioactive material is a quantity of the aggregate radioactivity of which exceeds that specified as follows:

Groups I or II radionuclides.....	20 curies
Groups III or IV radionuclides.....	200 curies
Group V radionuclides.....	5000 curies
Groups VI or VII radionuclides.....	50000 curies
Special Form Materials.....	5000 curies

Note that Large Quantities are those that exceed Type B quantities.

4.4 Fissile Radioactive Material, 173.389(a), 173.396

Fissile radioactive material is any material that contains certain quantities of plutonium-238, plutonium-239, uranium-233, or uranium-235, as specified in 173.396. Packages of fissile material are classified according to the controls needed to provide nuclear criticality safety during transportation as follows:

1. Fissile Class I -- This classification is assigned to packages which may be transported in unlimited numbers and in any arrangement, and which require no nuclear criticality safety controls during transportation. For purposes of nuclear criticality safety control, a transport index is not assigned to Fissile Class I packages. However, the external radiation levels may require a transportation index number.

2. Fissile Class II -- This classification is assigned to packages which may be transported together in any arrangement but in numbers which do not exceed an aggregate transport index of 50. For purposes of nuclear criticality safety control, individual packages may have a transport index of not less than 0.1 and not more than 10. However, the external radiation levels may require a highter transport index number but not to exceed 10. Such shipments require no nuclear criticality safety control by the shipper during transportation.

3. Fissile Class III -- This applies to packages which do not meet the requirements of Fissile Class I or II and which are controlled to provide nuclear criticality safety in transportation by special arrangements between the shipper and the carrier.

4.5 Transport Group, 173.389(h), 173.390

Normal form radionuclides are classified according to their relative radiotoxicity and their relative potential transportation hazard into seven transport groups (173.389 (h)). The transport groups for most common radionuclides are listed in Table A herein (173.390).

4.6 Low Specific Activity Materials, 173.389(c)

Low Specific Activity radioactive materials are defined by any of the following:

1. Uranium or thorium ores and concentrates.
2. Unirradiated natural or depleted uranium or unirradiated natural thorium.
3. Tritium oxide in water provided the concentration does not exceed 5mCi/ml.
4. Material in which activity is uniformly distributed and average concentration does not exceed the following:

Group I	0.0001 mCi/gm
Group II	0.005 mCi/gm
Group III, IV	0.3 mCi/gm

5. Nonradioactive objects externally contaminated with radioactive material, provided the contamination is not greater than the following:

Group I nuclides:	0.0001 mCi/cm^2
All other nuclides:	0.001 mCi/cm^2

4.7 Limited Quantity, 173.391(a)

Limited quantities are those quantities that do not exceed the following:

Group I	0.01	mCi
Group II	0.1	mCi
Group III, IV, V, VI	1.0	mCi
Group VII	25.	mCi
Special Form	1.0	mCi
Tritium Oxide in water	0.5	mCi/ml (total not to exceed 3 curies)
U-235	15.	grams

4.8 Transport Index, 173.389(i)

The transport index is placed on a package to designate the degree of control to be exercised by the carrier during transportation. The transport index to be assigned to a package of radioactive materials shall be determined by either subparagraph (1) or (2) below, whichever results in a larger value.

1. The highest radiation dose rate, in millirem per hour at three feet from any accessible external surface of the package; or

2. For Fissile Class II packages only, the transport index number calculated by dividing the number "50" by the number of similar packages which may be transported together as determined by the procedures prescribed in the regulations of the U.S. Nuclear Regulatory Commission, Title 10, CFR, Part 71.

4.9 Exclusive Use, (or "Sole Use" or "Full Load"), 173.389(o)

"Exclusive Use" means any shipment from a single shipper having the exclusive use of the transport vehicle. All initial, intermediate and final loading or unloading must be carried out by, or under the direction of, the shipper, the receiver, or the shipper's designated agent.

4.10 Closed Transport Vehicle, 173.389(q)

"Closed Transport Vehicle" means a vehicle equipped with a securely attached exterior enclosure which restricts the access of unauthorized persons to the space containing the radioactive materials during normal transport. The enclosure must limit access from top, sides and ends.

5.0 PREPARATION AND VAN SHIPMENT

5.1 Post-Loading Operations

The following operations shall be performed when the van loading is completed:

5.1.1 Secure waste compactor system if used.

5.1.2 Secure truck bay overhead crane if used.

5.1.3 Disconnect power supply from portable equipment.

5.1.4 Return radiation monitor to its original station.

5.1.5 Remove temporary plastic protective sheeting from rear of truck and from loading area.

CAUTION: PROTECT AGAINST CONTAMINATION BECOMING AIRBORNE WHEN PROTECTIVE SHEETING IS DISTURBED BY GENTLY REMOVING AND DISPOSING OF THE SHEETING IN THE PROPER RADWASTE RECEPTACLE.

5.1.6 Return portable scale to its storage location.

5.1.7 Secure fork truck.

5.1.8 Notify Radiation Protection Department that post-loading operations are completed, and request the necessary post loading radiation survey.

5.2 Shipment Bracing

5.2.1 When all packages are loaded into the van, the packages shall be braced so that they will not shift or otherwise incur damage during transport.

5.2.2 For bracing devices use clean wood or other durable device.

5.3 Shipment Inspection

5.3.1 The driver and the Radiation Protection Technician shall make one final visual check of the package shipment before closing the van.

5.3.2 Inspect the shipment using the following guidelines:

1. Check package loading - no packages should be tipped or distorted.

5.3.2 (Cont.)

2. Check bracing - it should be secure to prevent shifting.

3. Check inside of van visually for any damage due to loading operations.

5.3.3 Inspect the van and the tractor using the following guidelines:

1. Check general condition of vehicle.

2. Check conditions of tires, lights, directional signals, brakes, and steering.

3. Check for valid motor vehicle registration sticker.

IMPORTANT: IF THERE ARE ANY QUESTIONS WHATSOEVER ABOUT THE INTEGRITY OF THE SHIPMENT, VAN, OR TRACTOR, CONTACT THE RADIATION PROTECTION SUPERVISOR OR THE RADWASTE OPERATIONS COORDINATOR. DO NOT SHIP.

5.4 Van Closure

5.4.1 If the shipment contained in the van has been inspected and found to be satisfactory, the van shall be closed.

5.4.2 The van shall be closed and the door secured in accordance with proper methods for that van.

5.4.3 The driver and the Radiation Protection Technician present shall verify to their own satisfaction that the van door is secure.

5.5 Perform the Final Contamination Survey

5.5.1 Contamination surveys of the loaded van and its transport vehicle and of the loading area shall be performed to ensure that contamination levels are within acceptable limits prior to release for shipment.

5.5.2 The surveys shall be performed by the Radiation Protection Techician.

1. Obtain a minimum of 20 smears using discs or atomic wipes from various external surfaces, including:

   a. Sides or back of van
   b. Tractor and cab
   c. Vehicle tires

5.5.2 (Cont.)

2. Record the following on the Radiation Survey Log:

   a. Number of smear samples taken
   b. General location of samples
   c. Corresponding maximum contamination levels
   d. Detector instrument(s) used

3. Verify from the survey results that contamination levels do not exceed the following limits:

   220 dpm/100 cm^2 alpha
   2,200 dpm/100 cm^2 beta-gamma

4. Obtain smears of floor area and loading area to determine that smearable contamination does not exceed 400 dpm/100 cm^2.

   IMPORTANT: IF ANY OF THE CONTAMINATION LEVELS ARE EXCEEDED, NOTIFY THE RADIATION PROTECTION SUPERVISOR. DO NOT SHIP.

5.6 Perform the Final Radiation Survey

5.6.1 The van shall be surveyed for radiation dose rates to ensure the shipment is in compliance with the applicable DOT and NRC limits for radioactive materials.

5.6.2 The survey shall be performed by the Radiation Protection Technician.

1. Measurements shall be taken in the locations identified on the "Vehicle Survey Form".

2. Note the following on the Radiation Survey Log:

   a. Survey instrument(s) used
   b. Maximum close rate obtained at three (3) inches from van surface.
   c. Maximum dose rate obtained at six (6) feet from trailer (2 meters).

3. Verify from survey results that dose rates DO NOT EXCEED the limits specified below (these same limits are also specified on the "Vehicle Survey Form"):

   a. 200 millirem/hour at any point on the external surface of the vehicle.

   b. Ten (10) millirem per hour at any point six (6) feet from the outer edges of the vehicle (2 meters).

      NOTE: LIMITS IN a ALSO APPLY UNDERNEATH THE VAN.

c. Two (2) mr/hr at any occupied position in the cab. This includes the sleeper.

IMPORTANT: IF ANY OF THE RADIATION LEVELS IN c ARE EXCEEDED, NOTIFY THE RADIATION PROTECTION SUPERVISOR. DO NOT SHIP.

6.0 PLACARDING VEHICLE SHIPMENTS

6.1 Requirements

6.1.1 Each motor vehicle, rail car, or freight container that contains certain packages of radioactive material under certain conditions specified in Section 6.2 below must be placarded as described in Section 6.3 below, in accordance with 49 CFR 172 Subpart F.

6.1.2 Placards must be affixed on each end and each side of the vehicle.

6.2 Vehicle Placarding

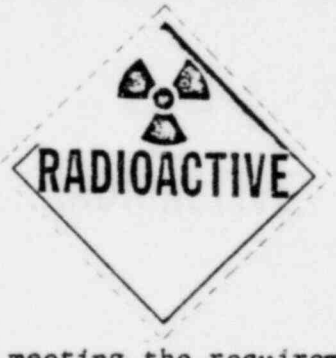
A "RADIOACTIVE" placard is required on the transport vehicle in the following situations pertaining to van shipments:

6.2.1 When radioactive material meeting the definition of Low Specific Activity is packaged and is shipped as "exclusive use."

6.2.2 When radioactive material meeting the definition of Low Specific Activity is unpackaged (bulk) and is shipped in a closed, exclusive use vehicle.

6.3 Placard Description

6.3.1 Except for size and color, the "RADIOACTIVE" placard shall be as follows:



6.3.2 In addition to meeting the requirements of § 172.519 and Appendix B to that part, the "RADIOACTIVE" placard must have the top portion yellow with the symbol black. The lower portion must be white and the inscription black.

6.4 Obtaining Placards

The placards shall be supplied with the vehicle. If they are not, obtain them from the instrument storage room.

7.0 SHIPPING DOCUMENTATION

7.1 Requirements

7.1.1 Every shipment of radioactive materials shall be accompanied by properly completed shipping papers.

7.1.2 The responsibility for providing the proper shipping papers remains with the shipper.

7.2 Documents

Radioactive Shipment Record
Vehicle Survey Form
Radiation Survey Log
Copy of Trip Routing
Appropriate State Forms
Radionuclide Analysis Program Results with Shipment Number Noted
Bill of Lading

These documents are described in N1-WHP-5 Cask Shipment Preparation Procedure Section 9.0 Shipping Documents and Section 10.0 Final Documentation Verification and Approval.