U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Special Report: WASTE PACKAGING INSPECTIONS OF LICENSEE-SHIPPERS
REPORT NO. 79-07A

Licensee-Shipper: Commonwealth Edison Company
Quad-Cities

Disposal Site: Chem-Nuclear Systems, Inc.
P. O. Box 726
Barnwell, South Carolina 29812
Docket No. 15000039

Inspector: R. A. Brown, Radiation Specialist
FF&MS Section, FF&MS Branch, Region II

Approved By: J. P. Potter, Section Chief
FF&MS Section, FF&MS Branch, Region II

SUMMARY

Inspection Dates: December 19, 1979, Visit to Chem-Nuclear Waste Disposal Site, Barnwell, South Carolina for Unannounced Inspection of Licensee-Shippers.
Areas Reviewed: Each licensee-shipper vehicle was inspected for compliance with Department of Transportation (DOT) and Nuclear Regulatory Commission (NRC) regulations as follows: (1) shipping paper requirements; (2) DOT Placarding requirements; (3) radiation levels; (4) removable contamination (5) DOT marking and labeling requirements for packages; and (6) DOT and NRC requirements for package external features.
Results: Of the six areas inspected involving this shipment, an apparent item of noncompliance (package not marked "Radioactive LSA") was identified in one area.

DETAILS

1. Persons Contacted

D. Ebenhack, Chem-Nuclear Systems, Inc.
V. Autry, South Carolina, DHEC
R. Bluemle, South Carolina, DHEC

2. General

The NRC inspection consisted of a review of the shipping papers, radiation survey of the vehicle, contamination surveys and radiation level surveys of selected packages. General surveys and observations were conducted to determine if the vehicle had proper placards, proper seals, and if any obvious safety hazards existed. The contents of the vehicles were inspected for appropriate marking, labeling, tightness of seals, integrity of package construction or any evidence of leakage.

Chem-Nuclear assigns a control number for each shipment upon arrival at the site. These numbers were called "shipment survey report numbers" (SSR No.), and were used by the inspectors to identify the licensee-shipper during this inspection.

3. Shipments Inspected

This shipment was inspected on December 19, 1979.

4. Shipping Papers

The shipping papers were reviewed for completeness and to ascertain if the contents of the shipment were properly identified, and if emergency notification procedures and instructions were included as required under 49 CFR 172, Subpart C. Specific requirements for shipping papers were reviewed as follows:

Material shipping name	-	49 CFR 172.100/172.200/172.202
Material class	-	49 CFR 172.200/172.202
Name sequence	-	49 CFR 172.200/172.202
Total quantity (volume)	-	49 CFR 172.200/172.202
Limited quantity	-	49 CFR 172.200/172.203
Name of each radionuclide	-	49 CFR 172.203
Physical and chemical form	-	49 CFR 172.203
Activity in curies	-	49 CFR 172.203
Category or label	-	49 CFR 172.203
Notation of NRC/ERDA package approval	-	49 CFR 172.203
Proper certification	-	49 CFR 172.204

In addition to the above, 49 CFR 177.817 requires carriers to maintain the above shipping papers readily available for inspection and recognizable by authorities in case of an accident.

5. Each vehicle was inspected for conformance with DOT placarding requirements (49 CFR 172, Subpart F and 49 CFR 173.392). The vehicles were also inspected for compliance with the following:

Maximum transportation index of 50 - (49 CFR 177.842)
Loaded so as to avoid spillage (49 CFR 177.842)
Properly blocked and braced (49 CFR 173.392/177.842)
LSA vehicle survey (49 CFR 177.843)

No items of noncompliance were identified.

6. Maximum Radiation Levels

Each truck was surveyed for maximum radiation levels in the normally occupied portions of the vehicle, in a plane at the edge of the flat bed or at the surface of the closed vehicles, in a vertical plane six feet from the sides of the vehicle where possible, and on the surface of a representative package. Shipping casks were surveyed at the surface.

No levels were in noncompliance with 49 CFR 173.393 limits.

7. Contamination Smears

Each vehicle and a representative sample package was surveyed for removable contamination by smearing over a 300 square centimeters area of the surface.

No more than two smears were taken from any package or vehicle. Smears were taken from areas that would most likely be contaminated. The smears were checked for gross Beta-gamma contamination at the site.

No smears were found to be contaminated in excess of 49 CFR 173.397 limits.

8. Packaging

A representative sampling of packages from each shipment was examined for conformance with DOT marking and labeling requirements. External features of the packages were examined for conformance with DOT and NRC requirments as noted below:

Low specific activity (LSA) packaging	-	49 CFR 173.392
Tight packages - ltd. Qty.,	-	49 CFR 173.391 or 173.392
No release of material	-	49 CFR 173.392/173.393
Radioactive material markings	-	49 CFR 172.310
Security seals	-	49 CFR 173.393
Gross weight requirements	-	49 CFR 172.310
Proper shipping name	-	49 CFR 172.100/172.300
LSA labeling	-	49 CFR 173.392
Cask design specifications	-	49 CFR 173.393a

Noncompliance - Package not marked "Radioactive LSA".

9. Verification of Package Contents

Due to the lack of facilities for properly opening packages at the site, the criteria for opening packages was restricted to those packages containing solidified waste (to verify the absence of free-standing water) and/or where there was evidence of leakage.