

# MARKING, LABELING and PLACARDING of WIPP SHIPMENTS

containing

## CONTACT-HANDLED TRANSURANIC (CH-TRU) WASTE<sup>1</sup>

### AUTHORITY

*Waste Isolation Pilot Plant Land Withdrawal Act*, Public Law 102-579, as amended<sup>2</sup>

U.S. Department of Energy (DOE) Order 460.2--*Departmental Materials Transportation and Packaging*<sup>3</sup>

U.S. Department of Transportation (DOT) regulations, Title 49 of the *Code of Federal Regulations*, Parts 172 and 173.

*Agreement for Consultation and Cooperation between the State of New Mexico and U.S. Department of Energy*, July 1, 1981, as amended<sup>4</sup>

### PAYLOAD CONTAINERS

- DOT "Type A" 55-gallon drum
- Standard Waste Box (SWB)
- Ten-Drum Overpack (TDOP)
- Pipe Overpack

Each individual payload container must meet the requirements of the WIPP Waste Acceptance Criteria and 49 CFR Part 173.412, as applicable.

### TRANSPORT CONTAINER (SHIPPING PACKAGE)

- DOT "Type B" Transuranic Package Transporter-II (TRUPACT-II)

This transport container must meet all applicable requirements of the corresponding U.S. Nuclear Regulatory Commission (NRC) Certificate of Compliance (C of C), Docket #71-9218, February 1997, or as may be amended by the NRC.

## **MARKING**

Each individual CH-TRU shipping package (TRUPACT-II) must be marked in accordance with all applicable requirements of:

- 49 CFR Part 172, Subpart D--**Marking** [in particular, see 49 CFR Part 172.310--*Class 7 (Radioactive) Materials*].

Specifically, the TRUPACT-II package must be marked to include the gross mass marking, the "Type B" marking, and the radiation marking (Trefoil Symbol, 49 CFR Part 172--Appendix B). The TRUPACT-II is considered a non-bulk packaging because it will have an intermediate form of containment. (See 49 CFR 171.8--*Bulk Packaging*) As such, the TRUPACT-II will also be marked with the Proper Shipping Name and the UN ID number. Reportable Quantity (RQ) will be marked on the package in association with the Proper Shipping Name when RQ levels are reached. It is anticipated that most WIPP shipments will contain a reportable quantity of TRU waste.

In addition to the preceding requirements, each individual CH-TRU waste payload container must be marked as specified in:

- *Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, DOE/WIPP-069, Rev. 5, April 1996, Section 3.2.4--**Container Marking**.

## **LABELING**

Each shipping package (TRUPACT-II) must be labeled in accordance with all applicable requirements of:

- 49 CFR Part 172, Subpart E--**Labeling** [in particular, see 49 CFR 172.403--*Class 7 (Radioactive) Materials*; 49 CFR 172.436--*RADIOACTIVE WHITE-I label*; 49 CFR 172.438--*RADIOACTIVE YELLOW-II label*; and 49 CFR 172.440--*RADIOACTIVE YELLOW-III label*]

The proper label to affix to each loaded TRUPACT-II is based on the maximum radiation level at any external surface of the package and on the Transport Index (TI)<sup>5</sup>. Each package will be labeled as *RADIOACTIVE WHITE-I*, *RADIOACTIVE YELLOW-II*, or *RADIOACTIVE YELLOW-III*, as appropriate. The following table, found in 49 CFR 172.403, can be used to determine the proper label for each shipping package:

Transport Index	Maximum Radiation Level on External Surface	Radioactive Label Category
0	Less than or equal to: 0.005 mSv/hr (0.5 mrem/h)	WHITE-I
More than 0, but less than or equal to 1	Greater than: 0.005 mSv/hr (0.5 mrem/hr), but less than or equal to: 0.5 mSv/hr (50 mrem/hr)	YELLOW-II
More than 1, but less than or equal to 10	Greater than: 0.5 mSv/hr (50 mrem/hr), but less than or equal to: 2.0 mSv/hr (200 mrem/hr)	YELLOW-III
More than 10	Greater than: 2.0 mSv/hr (200 mrem/hr), but less than or equal to: 10 mSv/hr (1,000 mrem/hr)	YELLOW-III [must be shipped as exclusive use; see 49 CFR 173.441(b)]

**NOTE:** If plutonium or another fissile material is present in any payload container inside the shipping package, the TRUPACT-II will have an assigned Transport Index (TI) of 0.4 for nuclear criticality purposes *unless* the actual TI exceeds 0.4. In that case, the actual TI reading would be used to determine the proper label.

Once the proper label for each TRUPACT-II is determined, two of those labels must be affixed to the shipping package (one on each side).

Each empty TRUPACT-II package must be labeled with an *EMPTY* label in accordance with 49 CFR 172.403(d), 172.450, and 173.428(d).

## **PLACARDING**

Each WIPP vehicle must be placarded in accordance with all applicable requirements of:

- 49 CFR Part 172, Subpart F--**Placarding** [in particular, see 49 CFR 172.504--*General Placarding Requirements*; and 49 CFR 172.556--*RADIOACTIVE placard*]

A WIPP vehicle transporting one, two or three loaded TRUPACT-II containers is required to be placarded with a *RADIOACTIVE* placard when any one of the containers has:

- A *RADIOACTIVE YELLOW-III* label, indicating a radiation level at any external surface of the TRUPACT-II that is greater than 0.5 mSv/hr (50 mrem/hr); or
- A radiation level at one meter (3.3 feet) from any external surface of the TRUPACT-II that is equal to or greater than 0.01 mSv/hr (1 mrem/hr); or
- A Highway Route Controlled Quantity (HRCQ) of CH-TRU waste, as determined using 49 CFR 173.403 (HRCQ definition) and the Table of A<sub>2</sub> Values in 49 CFR 173.435.

A WIPP vehicle carrying one or more TRUPACT-II containers which meet the HRCQ definition is subject to the special placarding provisions in 49 CFR 172.507 and 172.527.

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1. The term "contact-handled transuranic waste" is defined in the *WIPP Land Withdrawal Act* as transuranic waste with a surface dose rate not greater than 200 millirem per hour (200 mrem/hr). The *Act* defines "transuranic waste" as waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years.

2. Section 9(a) of the *WIPP Land Withdrawal Act* states: "Beginning on the date of the enactment of this Act, the [DOE] Secretary shall comply with respect to WIPP, with...(G) all other applicable Federal laws pertaining to public health and safety or the environment; and (H) all regulations promulgated, and all permit requirements, under the laws described in subparagraphs (B) through (G)." The federal Hazardous Materials Transportation Act and its implementing regulations in Title 49 of the Code of Federal Regulations (49 CFR) would be included.

3. DOE Order 460.2 states: "It is DOE policy that, notwithstanding the exemptions available through the National Security Provision, shipments under this provision will comply with 49 CFR 106-180 requirements, except those that infringe upon maintenance of classified information."

4. The *Second Modification to the WIPP Agreement for Consultation and Cooperation*, executed August 4, 1987, amended Paragraph E. of Article VI to include the following language: "The transportation of radioactive waste to WIPP shall comply with the applicable regulations of the U.S. Department of Transportation and any applicable corresponding regulations of the U.S. Nuclear Regulatory Commission."

5. The Transport Index (TI) must be determined in accordance with its definition in 49 CFR 173.403. In essence, it is calculated by taking a radiation measurement one meter (3.3 feet) from any external surface of the shipping package.

**SOURCE:** Compiled by Chris J. Wentz, State of New Mexico, in consultation with the U.S. Department of Energy-Carlsbad Area Office, U.S. Department of Transportation-Office of Motor Carriers (Denver), Commercial Vehicle Safety Alliance, Westinghouse-Waste Isolation Division, and Western Governors' Association Technical Advisory Group for WIPP Transport, April 1998