Identifying & Managing Radiation Emergencies

All shipments of radioactive material, with the exception of those containing limited quantities or those of low specific activity (LSA), bear two identifying warning labels affixed to opposite sides of the outer package.

Three different labels -- White-I, Yellow-II, or Yellow-III -- are used on the external surface of packages containing radioactive material.

The U.N. hazard class "7" is on labels of radioactive material.

Package labels specify the radioactive content and the quantity in curies. Yellow-II and Yellow-III also specify the transport index.

Label	**Radiation Level Associated With Intact Package**	**Symbol**
Radioactive White-I	Almost no radiation--0.5 mrem/hr (5 µSv/hr) maximum on surface	
Radioactive Yellow-II	Low radiation levels--50 mrem/hr (0.5 mSv/hr) maximum on surface; 1 mrem/hr (10 µSv/hr) maximum at 1 meter	
Radioactive Yellow-III	Higher radiation levels--200mrem/hr (2 mSv/hr) maximum on surface;[a] 10 mrem/hr (0.1 mSv/hr) maximum at 1 meter Also required for fissile class III or large-quantity shipments, regardless of radiation level	
"Exclusive use" shipments may be up to 0.01 Sv/hr (1 rem/hr), provided an enclosed vehicle is used. An unenclosed shipment (e.g., on a flatbed truck) may not exceed 2 µSv/hr (200 mrem/hr) on the surface.		

WHAT DO THE PLACARDS FOR SHIPMENT OF RADIOACTIVE MATERIAL INDICATE?

Typical radioactive material warning placard:

Standard size is 10 x 10 inches.

The placard shown must be used anytime a vehicle carries one or more packages of a Radioactive Yellow III label or if the vehicle is operating under exclusive use provisions required for certain LSA shipments or packages with higher than normal radiation levels.

Any four-digit ID number shown on an adjacent **orange panel** is used for specific identification of the cargo. The panel to the right bears the international identification

number (International Series) for radioactive material, LSA, n.o.s. (material containing uniformly distributed radioactive material in low concentrations). This is the same four-digit ID number that must appear with the proper shipping name on the package as well as on the shipping documents. Refer to this number in the ERG for response information.

The number "7"at the bottom of the placard is the U.N. hazard class description for radioactive materials.

Most shipments of radioactive material are accompanied by documents, such as shipping papers or bills of lading, which are of great value in assessing potential hazards in transportation accidents. These papers will have a 24-hour contact number for information about the material and potential health hazards.

LIMITS FOR NON-EXCLUSIVE USE VEHICLE

- 2 mSv/hr (200 mrem/hr) at surface of package
- Individual packages cannot exceed 0.1 mSv/hr (10 mrem/hr) at 1 meter

LIMITS FOR EXCLUSIVE USE VEHICLE

- 20 µSv/hr (2 mrem/hr) in cab
- 2 mSv/hr (200 mrem/hr) on surface of vehicle
- 0.1 mSv/hr (10 mrem/hr) maximum at 2 meters

WHAT IS THE TRANSPORT INDEX?

The number given indicates the maximum radiation level (in mrem/hr) at a distance of one meter from the external surface of a package or container. (Readings in mSv/hr are multiplied by 100 to get mrem/hr.) For example, a TI of 3 would indicate that, at one meter from the labeled package, the radiation intensity that can be measured is no more than 3 mrem/hr (.03 mSv/hr).

If the radiation level at one meter from a package is found to be higher than the specified value, a radiation authority should be consulted. The package contents might have shifted, shielding might have been breached, or an error might have occurred in packaging or labeling.

IS CONTAMINATION POSSIBLE?

A Comparison of Transportation Accidents Based on Type of Contaminant		
	Toxic/Hazardous Chemicals	Radioactive Material
Is the material immediately threatening to the lives of rescuers and victims?	Possibly	Very unlikely

Is respiratory protection (SCBA) recommended for emergency response?	Yes	* Yes, if fire, fumes, smoke, or chemicals are involved or if environmental conditions could cause material to be airborne.
Is special protective clothing recommended for emergency response?	Yes	* Protective clothing, turnout gear, or other clothing that covers bare skin can keep contaminants off skin.
Does contamination with material produce visible early skin injury (i.e., redness, blistering, or rash that is not due to heat or flames)?	Possibly, if corrosive or toxic.	No. If these symptoms (problems) occur, look for other causes.
Does exposure cause immediate symptoms such as coughing, choking, burning eyes, vomiting, pain, etc., or unconsciousness?	Possibly	No. If these symptoms occur, look for other causes.
Are instruments for detection and measurement of hazard readily available?	No	Yes
Can human exposure be measured at the accident scene?	No	Yes

* Follow standard protocols. Consult U.S. Department of Transportation (DOT) Emergency Response Guidebook.

Most of this information is courtesy of US Government CDC. In times of an emergency, much of this material may not apply when it comes to specialized care and testing. These are guidelines to help you when that care is not available. Some of this information is very technical and difficult to understand, but hopefully someone will be available for help in treatment and understanding.

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