North American Standard Level VI Inspection Procedure for Transuranic Waste and Highway Route Controlled Quantities (HRCQ) of Radioactive Material

Omit steps that do not apply.
For more detailed information, see the written procedures contained in the CVSA Operations Manual.

☐ STEP 1 Prepare Equipment

Ensure that your radiation monitoring equipment meets minimum standards:

- Use instruments that read dose rates in the range of .001 mSv/hr to 10 mSv/hr or .1mrem/hr to 1000 mrem/hr.
- Ensure that radiation survey instrument has been calibrated within the past year in accordance with ANSI N323-(1978) and meet durability standards on ANSI N13.4-(1971) and meets the manufacturer's operational requirements.
- Install batteries, note (+) (-) polarity marks on the inside of the lid
- Turn on radiation survey instruments(s) to warm them up.
- Operationally check your radiation survey instrument(s): Ludlum 14-C.
- Install the cable on the instrument.
- Install the cable on the detector probe.
- Turn the instrument range switch to X1000, depress the BAT switch.
  - The meter should deflect to the battery check position of the meter scale.
- Expose the internal detector to the radiation check source (if provided).
  - The speaker (or headphones) should "click" with the audio switch in the ON position.
- Select a scale that will give a mid-range reading.
- Place the external detector within 1/4 inch of the check source.
- Compare the instrument reading with the calibration card (if equipped).
  - There should be no more than a 10 % + or - variation between the reading and the calibration card.

NOTE: Inspectors should review the instrument manufacturer's guidance on calibration.

- Conduct the background radiation survey and record the meter reading on the Level VI Inspection form.

☐ STEP 2 Begin Radiation Survey of Vehicles/Package

IMPORTANT!
Do not approach vehicle until this portion of the Level VI Inspection is complete!

- Begin the radiation portion of the inspection at the driver's side of the power unit.
- With the instrument turned on, approach the driver's side of the power unit. Stop when you are 2 meters (6.6) feet) from the unit and take an instrument reading.

EMERGENCY PROCEDURES: If, at any time the survey readings exceed those stated in Table 1 for exclusive use vehicles or non-exclusive use vehicles, immediately perform the following actions:

- STOP!! DO NOT CONTINUE INSPECTION.
- Establish a hot line per the Emergency Response Guidebook (ERG) or follow state procedures.
- Have the driver come to you.
- Survey the driver for contamination.
- Notify appropriate radiation health agency.
- Notify shipper.
- Place vehicle out-of-service.

- If the radiation survey instrument readings are less than .1 mSv/hr (10 mrem/hr) at 2 meters (6.6 feet), continue with the inspection as follows:

Table 1
Summary of U.S. Department of Transportation Radiation Limits

MEASURING POINT	RATE LIMIT
Exclusive Use Vehicles	
Two meters (6.6') from sides-enclosed trailer	.1 mSv/hr (10 mrem/hr)
Two meters (6.6') from vertical plane of trailer edge (flatbed)	.1 mSv/hr (10 mrem/hr)
At contact on surface of side and top-enclosed trailer	2 mSv/hr (200 mrem/hr)
At contact on any surface of load (flatbed)	2 mSv/hr (200 mrem/hr)
On vertical plane of trailer edge (flatbed)	2 mSv/hr (200 mrem/hr)
Surface of bottom of trailer	2 mSv/hr (200 mrem/hr)
Package surface (enclosed trailer only)	10 mSv/hr (1000 mrem/hr)
Occupied area of vehicle	.02 mSv/hr (2 mrem/hr)
Non-Exclusive Use Vehicles	
One meter (3.3') from any surface of package	.1 mSv/hr (10 mrem/hr)
Package surface	2 mSv/hr (200 mrem/hr)

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Promoting Commercial Motor Vehicle Safety and Security

- Contact the driver, identify yourself and tell the driver what you are doing. Instruct the driver to provide you with the shipping paper, and then have the driver return to the vehicle.
- Determine Exclusive / Non-Exclusive use shipment from shipping paper.
- Begin the radiation survey portion of the inspection. Remember there are 5 primary radiation inspection points:
  - Vehicle radiation survey from 2 meters (6.6 feet) for ***exclusive use shipments*** or 1 meter (3.3 feet) for ***non-exclusive use shipments***.
  - In-cab radiation survey.
  - Vehicle radiation survey of the trailer outer surface.
  - Package/container surface radiation survey.
  - Radiation survey of the bottom surface of the transport vehicle.
- Conduct the vehicle radiation survey at the proper distance:
  - Measure and note the highest instrument reading and location from the vertical planes represented by the outer lateral surfaces of the transport vehicle (both sides, front and rear).
  - After subtracting background, record highest reading and location on the Level VI Inspection form.
  - Readings must not exceed .1 mSv/hr (10 mrem/hr) at any point.
- Conduct the in-cab radiation survey:
  - Measure and note the highest instrument reading and location from the driver's seat, passenger seat, and any normally occupied area.
  - After subtracting background, record highest reading and location on the Level VI Inspection form.
  - Readings must not be greater than .02 mSv/hr (2 mrem/hr) in any normally occupied space unless in a state or federal personal dosimetry program.
- Conduct the vehicle radiation survey of the transport trailer outer surface:
  - Start at the left front of the trailer.
  - Move slowly and use the instrument with a continuous motion to monitor the outer surface of the entire trailer.
  - Keep the probe within one inch of the surface of the trailer.
  - After subtracting background, record highest reading and location on the Level VI Inspection form.
  - Reading must not exceed 2 mSv/hr (200 mrem/hr) at any point including the upper and lower surfaces.
- Conduct the package surface radiation survey:
  - Start at the left side of the upper surface of the load (or personnel barrier).
  - Move slowly and use the instrument with a continuous motion to monitor the outer surface of the entire container/package.
  - Keep the probe within one inch of the surface of the package.
  - After subtracting background, record highest reading and location on the Level VI Inspection form.
  - Readings must not exceed 2 mSv/hr (200 mrem/hr) at any point.
- Conduct the radiation survey of the bottom of the transport vehicle:
  - Start at the left front of the transport vehicle.
  - Move slowly and use the instrument with a continuous motion to monitor the underside of the entire transport vehicle.
  - After subtracting background, record highest reading and location on the Level VI Inspection form.
  - Readings must not exceed 2 mSv/hr (200 mrem/hr) at any point.

☐ **STEP 3** Conduct the North American Standard Level I & HAZMAT / TDG Inspections

- Complete the North American Standard Level I Inspection, noting any violations.
- Locate the violations in the CVSA *North American Standard Out-of Service Criteria and Level VI Inspection Procedures and Out-of-Service Criteria for Commercial Highway Vehicles Transporting Transuranics and Highway Route Controlled Quantities of Radioactive Materials* and verify out-of-service requirements.
- Complete the HAZMAT / TDG portion of the Level VI Inspection.
  - Verify HRCQ route plan/certificate of training (if applicable).
  - Verify that the isotopes match the shipping paper and labels.
  - Verify that proper label is attached, (White I, Yellow II, III, Fissile).
  - Verify Transport Index and or CSI match the shipping papers and labels.
  - If HRCQ, verify if the carrier has a FMCSA HM Permit.
  - If HRCQ verify that the white warning background is behind placard.
  - Verify that the carrier is in compliance with the operating authority requirements.

☐ **STEP 4** Complete the Inspection

- Return all documents to the driver and explain all paperwork.
- If vehicle(s) are placed out-of-service, place them in a suitable location and then place the sticker(s) in the applicable location.
- If at the point of origin a vehicle passes a "defect free" inspection, place the CVSA Level VI decal in the upper corner of the passenger side windshield. If a CVSA Level VI decal is removed due to a Level I or Level VI out-of-service violation or if there was an equipment change enroute another "defect free" inspection is to be completed.
- If CVSA decal is expired or missing, reapply one.