

CHAPTER 13
RADIOISOTOPE IDENTIFICATION DEVICES
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CHAPTER 13

RADIOISOTOPE IDENTIFICATION DEVICES

1. INTRODUCTION.

- a. Handheld Radioisotope Identification Device. A Radioisotope Identification Device (RIID) is a radiation detector capable of analyzing the energy spectrum emitted by individual radioactive materials to identify specific isotopes. These isotopes are then broken down and categorized into groups, including, but not limited to: Industrial, Medical, Naturally Occurring Radioactive Materials, and Special Nuclear Material (SNM). These devices may also be used as survey instruments to locate radioactive materials.
- b. Background. Law enforcement, customs and border protection, and other personnel are being equipped with RIIDs as part of a strategy to interdict illicit movement of radioactive materials. When radiation sources are detected by screening devices such as radiation portal monitors (RPM) or personal radiation detectors, RIIDs are used to determine whether the source of radioactivity constitutes a threat to public safety. These devices are also used for situational assessment during radiological emergencies.
- c. Function. Most radioisotopes emit gamma rays, while others emit alpha particles, beta particles, or neutrons. Each isotope emits radiation with distinct characteristic energies. Generally, portable handheld RIIDs are designed specifically to detect gamma rays, and some have neutron detection capabilities. When gamma rays, or neutrons, are emitted by a radioactive source, the detectors within the RIID generate an energy spectrum. The RIID, using internal software, compares these spectra to known spectral graphs contained in an internal library. The RIID will then analyze these energy readings, identify the radioisotope, and determine whether radiation levels have reached, or exceeded, threshold limits.

2. POLICY.

- a. Enforcement of Radioactive Materials Regulations. Enforcement actions specific to the transportation of radioactive materials shall only be performed by commercial enforcement program (CEP) personnel who are certified in General Hazardous Materials Inspection and the Radioactive Materials Response and Enforcement Program (RMREP), as outlined in Chapter 12, Training, of this manual.
- b. Emergency Response. Personnel shall only respond to an incident involving radioactive materials within their level of training and available resources, and

within the response guidelines set forth in Chapter 2, Hazardous Materials Incident Command and Reporting, of this manual. Radiological monitoring and interpretation of technical information for radiological incidents shall only be performed by personnel who are certified in the RMREP.

3. RESPONSIBILITIES.

a. Commercial Vehicle Section. Commercial Vehicle Section (CVS) shall maintain a certified Departmental Radiation Safety Officer (DRSO) and alternates, as required in Chapter 10, Radioactive Materials Response and Enforcement Program, of this manual. The DRSO will evaluate RPM alarm incidents, assist in analyzing spectral data acquired through the use of RIIDs, coordinate Joint Assessment Center notifications, and conduct reachback operations. The DRSO and alternates shall meet the minimum training requirements as outlined in Chapter 12 of this manual.

b. Commanders' Responsibilities.

(1) Ensure the equipment is maintained in good working condition and proper procedures are followed for repair or service.\

(2) This equipment is categorized by the Department as "major". If a RIID is lost, damaged, stolen, or destroyed, the reporting and cost recovery procedures outlined in Highway Patrol Manual 11.2, Materials Management Manual, Chapter 8, Equipment, shall be adhered to.

b. Incident Management.

(3) Based on an evaluation of the risk presented, emergency incident management procedures shall be implemented as necessary. For further details, refer to Chapter 2 and Chapter 10 of this manual.

5. EQUIPMENT, OPERATIONS, AND MAINTENANCE.

a. Equipment. Radioisotope Identification Device Kit.

(1) The RIID Kit consists of the following equipment:

- (a) One RIID.
- (b) One laminated instruction/quick-reference card.
- (c) One RIID operator manual, on DVD.
- (d) Two 8-cell "AA" battery packs.
- (e) Eight 2100 mAh NiMH "AA" rechargeable batteries.
- (f) One 512 megabyte CompactFlash (CF) card (CF cards shall not be interchanged between RIID units; unit-specific calibration data is stored on the card that is necessary for proper operation).
- (g) One CF card reader.

- (h) One 120 volt AC/DC recharging adapter.
- (i) One padded nylon shoulder carrying strap.
- (j) One black plastic hard-shell carrying case.

c. Maintenance.

(1) Calibration, Repair, and Inspection. The RIID performs an automatic calibration at each start-up and continually during operation.

(a) Users should not attempt to make gamma identification before the initial calibration has completed, as it may yield inaccurate results.

(b) The RIID will advise users when the calibration process is complete.

(c) Personnel shall not perform any repair or maintenance other than a battery change.

(d) If damage or a malfunction is encountered which cannot be remedied by troubleshooting, contact CVS for assistance.

6. SECURITY. Specified information regarding the RIID Kits shall be considered Law Enforcement Sensitive. Persons requesting information about the RIID Kits shall be directed to CVS. The requester shall be identified to verify a need to know and legitimacy of the request when specific operations of the RIIDs are requested (i.e., detector sensitivity, locations, operational times, and procedures). This information must then be forwarded to CVS for evaluation.

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