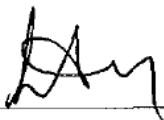




RCP – 403

**Responding to Incidents at a Solid
Waste and Metal Recycling
Facilities Equipped with Radiation
Monitoring Systems**

Submitted by: 

Date: 3/11/2021

Reviewed by: 

Date: March 11, 2021

Approved by: 

Date: 3/23/2021

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1. Purpose

The purpose of this procedure is to provide standard guidance to Radiation Division personnel when responding to radiation incidents involving solid waste and scrap metal facilities.

2. Scope

This procedure applies to all Radiation Division personnel when responding to an incident at a solid waste or scrap metal facility involving the potential presence of radioactive material.

3. References

- 3.1 Connecticut General Statutes, Chapters 446 and 446a.
- 3.2 Regulations of Connecticut State Agencies, Sections 19-24-1 through 19-24-14.
- 3.3 DOT instructions for use of Special Permit DOT-SP 11406 (Waste) – (available at <https://www.crcpd.org/page/Transportation>)
- 3.4 DOT instructions for use of Special Permit DOT-SP 10656 (Metals) (available at <https://www.crcpd.org/page/Transportation>)
- 3.5 FRMAC Monitoring and Sampling Manual, Vol. 1, Rev 03, April 2019
- 3.6 NRC Training Powerpoint – H122 Gamma Spectroscopy Overview 2011 (ADAMS ML11229A699)

4. Definitions and Abbreviations

- 4.1 See Connecticut General Statutes, Section 22a-151.
- 4.2 See Agency Administrative Regulations, Sections 19-24-1 through 19-24-14.
- 4.3 See National Council on Radiation Protection Composite Glossary.

5. General

5.1 Equipment

1. Ludlum 14C kit (or equivalent)
2. RIID (RadioIsotope Identifier) – eg - Identifinder
3. Suitable PPE (reflective vest, safety glasses, hardhat, safety shoes, face mask, gloves – as appropriate)
4. PeakEasy gamma spectroscopy software

5.2 Precautions and Limitations

1. Ensure PPE is appropriate based on hazard assessment.
2. Dead time considerations for in-situ gamma spectroscopy:
If using the Identifinder, measurement should be between the arrows on the display. This may be equivalent to 15 – 20% deadtime as shown in PeakEasy

results. Equipment similar to Identifinder may have their own dead time measurement criteria. If there is no instrument specific guidance: 1) <10% dead time (Ref. 3.6) and 2) maximum exposure rate during survey is 3 mr/hr (pg 16 of Ref. 3.5).

5.3 Responsibilities

1. Completion of any record required by this procedure.

5.4 Prerequisites

1. Authorization from CRCPD to sign DOT Special Permits – authorized individuals can be reviewed on CRCPD web site at <https://www.crcpd.org/resource/collection/3EB7AAD1-9FD4-4CD6-BF73-850E20CE0FE5/auth-reg.pdf> or review CRCPD Directory of Personnel Responsible for Radiological Health Programs
2. Ensure all instruments used are calibrated and functioning properly.
3. PeakEasy software is available for isotopic analysis of gamma spectrum.

5.5 Records

1. Attachments 1 through 6 are records which are maintained by the Radiation Division.

5.6 Attachments

1. DOT SP-11406, Waste or Recycle Materials (as revised)
2. DOT SP-10656, Scrap Metal or Related Material (as revised)
3. DEEP Radiation Division Incident Report (as revised)
4. DEEP Radiation Division Waste Incident Response Decision Chart
5. Notification of DOT Special Permit to Department of Motor Vehicles
6. Approved Medical Radioisotopes contained in solid waste allowed for incineration. (as revised)
7. Job Aid - Special Permit Processing
8. Job Aid - Performance of Hot Load Surveys

5.7 Summary of changes

1. Added/ modified NOTE before 6.3.10 and 6.3.13 to address Pu-239
2. Added Lu-177 and Th-227 to Attachment 7 (Approved Medical Isotopes)
3. Added NOTE to Attachment 1 and 2 to check for current version of form.
4. Updated Attachment 1 and 2 to reflect current version of special permit.
5. Editorial changes
6. Added clarification on appropriate dead time limits for detection equipment
7. Added Attachments 7 and 8, job aids for survey of hot loads and for special permits
8. Deleted old Attachment 6 (Multi-media checklist)
9. Added generic term for Identifinder -RIID

6. Procedure

6.1 **Immediate Action:** – *Performed by Supervising Physicist.*

6.1.1 Upon receipt of a call for assistance, record/obtain the following administrative information if available.

6.1.1.1 Date and Time call was received.

6.1.1.2 Name and Location of Facility

6.1.1.3 Name, title and telephone number of contact

6.1.1.4 Incident Information: Radiation monitor reading (& background), any handheld instrument measurements/isotopic identification by facility personnel, name & type of carrier, origin of material (town, sole use, out of state, etc.).

6.1.2 Notify On Call Duty Officer or other Radiation Control Physicist.

6.2 **Response Actions:** - *Performed by authorized Radiation Control Physicist.*

6.2.1 Obtain DEEP/RD Incident Number from Incident Log Book.

6.2.2 Refer to Attachment 4 for the appropriate response based on information obtained from the Facility and/or Supervising Physicist.

6.2.3 The Radiation Control Physicist will be dispatched to the facility if one or more of the following conditions are met:

6.2.3.1 The dose on the external surface of the vehicle exceeds 50 mr/hr or dose to any occupied space (cab areas) exceeds 2 mr/hr.

6.2.3.2 An isotopic identification has been performed and the material is not indicative of one of the approved medical radioisotopes listed in Attachment 7.

6.2.3.3 The Supervising Physicist has determined that a response is warranted.

6.2.4 If the information obtained from the facility or the Supervising Physicist does not warrant a dispatch of a Radiation Control Physicist, notify the facility that the following options are available.

NOTE

A Waste Tipping Permit issued by the DEEP Materials Management Bureau must be in effect for the location at which the load will be tipped and segregated.

6.2.4.1 Option 1 – A radiation consultant is hired to disposition the radiation alarm.

- Notification of the results is made to the Radiation Division after disposition of the radiation alarm.

6.2.4.2 Option 2 – A dose reading is obtained off of the external surface of the vehicle and a DOT Special Permit is requested and issued during normal business hours to return the load to the originator for disposition.

- Notification of the results is made to the Radiation Division after disposition of the radiation alarm.
- If the conditions for a DOT Special Permit are met, issue a DOT Special Permit utilizing DOT instructions for DOT Special Permits. DOT instructions are available from the CRCPD website. (Attachment 7 contains actions for consideration when preparing a Special Permit.)
- Obtain a DOT Special Permit Number.

6.2.4.3 Option 3 – Facility operator obtains detailed radiation information utilizing radionuclide identification detector(s) and emails results to the Radiation Division for review and analysis during normal business hours.

- A Radiation Control Physicist will review information obtained to determine the radioisotope.

- The Radiation Control Physicist should analyze the results from the facility utilizing gamma spectroscopy software.
 - If the radioisotope identified is one of the approved radioisotopes for normal disposal as listed in Attachment 7, notify the facility and the Supervising Physicist of the results and that the material is allowed to be processed without any radiological concern.
 - If the radioisotope is not identified as one of the approved radioisotopes for normal disposal as listed in Attachment 7, notify the facility and the Supervising Physicist of the results that the material cannot be released and the following options are available.
Option 1 – A radiation consultant is hired to disposition the radiation alarm.
Notification of the results is made to Radiation Division after disposition of the radiation alarm.

NOTE

DEEP-RD Personnel should obtain site supervisory approval for segregation and confirm whether site, hauler or material source will take possession and responsibility for segregated material before providing assistance in the tipping and segregation of the load.

Option 2 – DEEP Radiation assists in the identification and segregation of the radiation alarm source during normal business hours.

After identification and segregation is performed, a radiation consultant/ radioactive waste broker disposes the radiation source.

Notification of the results is made to Radiation Division after disposition of the radiation alarm.

NOTE

Attachment 8 contains guidance which may be useful for performing a hot load survey.

6.3 Response Actions for Dispatching to a Facility: - Performed by Radiation Control Physicist.

- 6.3.1 Request backup from supervisor, if necessary.
- 6.3.2 If necessary, contact facility for additional information, including directions, truck identification etc.
- 6.3.3 Proceed to facility at a reasonable speed for road conditions and situation.
- 6.3.4 Notify facility upon arrival for any additional instructions.
- 6.3.5 Wear all appropriate PPE as required by the DEEP and any additional requirements by the facility.
- 6.3.6 Survey outside of vehicle, and cab area using appropriate instrumentation. Use an Ion Chamber or other Energy Compensated Detector, to document dose rates on side of vehicle and cab area.
- 6.3.7 Document origin: Transfer station, curbside pick-up, front loaded dumpster service, sole use dumpster from within Connecticut or from out of state.
- 6.3.8 Perform a 3-minute minimum background count with a portable gamma ray spectroscopy device.
- 6.3.9 Perform a 3-minute minimum isotopic identification through the truck side with a portable gamma ray spectroscopy device.

NOTE:

An isotopic identification confidence level of ≥ 7 must be achieved with a portable gamma ray spectroscopy device to ensure accurate identification. An isotope identification below a confidence level of 7 may be analyzed using gamma spectroscopy software to determine the radioisotope. If Pu-239 is indicated, the spectrum shall be reviewed to consider Lu-177 as the source.

6.3.10 Allow an approved facility to tip and process the waste as normal non-radioactive waste, if the radioisotope is identified as one of the approved medical isotopes from Attachment 7, and the contact dose rate on the external surface of the vehicle does not exceed 50 mr/hr. Authorization by a Supervising Radiation Control Physicist is required to tip and process any other radioisotope.

NOTE

A Waste Tipping Permit issued by the DEEP Materials Management Bureau must be in effect for the location at which the load will be tipped and segregated.

6.3.11 If Cs-137, Ir-192, Co-60 or Ra-226 is identified consider the possibility of a large shielded source. Obtain the authorization of the Supervising Radiation Control Physicist and site supervisory approval prior to tipping the load.

NOTE

DEEP-RD Personnel should obtain site supervisory approval for segregation and confirm whether site, hauler or material source will take possession and responsibility for segregated material before providing assistance in the tipping and segregation of the load.

6.3.12 Perform a second 3-minute minimum background count with a portable gamma ray spectroscopy device. (This ensures equipment functionality if the expected low level Cs-137 shows up in the Identifinder background spectrum.)

NOTE

If Pu-239 is indicated when using a portable gamma ray spectroscopy device, the spectrum shall be reviewed to consider Lu-177 as the source.

6.3.13 If a positive isotopic identification cannot be made, a radioisotope other than listed in Attachment 7 is found, or the contact dose rate on the

external surface of the vehicle exceeds 50 mr/hr, or greater than 2 mr/hr in the cab area, contact a Supervising Radiation Control Physicist for further instructions.

- If the load will be returned to its origin and the conditions for a DOT Special Permit are met, issue a DOT Special Permit utilizing DOT instructions for DOT Special Permits.

6.3.14 If the originating facility is registered with the DEEP, Radiation Division, a copy of the Special Permit shall be attached to their file (eg – ICM, IBM Case Manager).

6.3.15 At the location where segregation will be performed:

6.3.15.1 Don appropriate PPE based on Hazard Evaluation.

6.3.15.2 On the tipping floors: make sure equipment operators are aware of your presence.

6.3.16 During the segregation of radioactive material: Keep aware of vehicles and equipment operating near you.

6.3.16.1 When an item is identified, place it in a large bag and move it away from the work area to keep the background low.

6.3.16.2 **NOTE:** If a large volume of waste is segregated (more than two large bags) arrange with the hauler to have a suitable small dumpster delivered for storing the waste.

6.3.16.3 Continue surveying until no material over twice background can be found.

6.3.16.4 Survey waste container (dumpster, trailer or truck) to insure that no detectable radioactive material remains.

6.3.16.5 Survey segregated material for highest contact, one foot and three foot readings. Perform a 3 min minimum isotopic analysis.

6.3.16.6 Allow the segregated material to enter the regular waste stream if the condition of 6.2.4.3.1 can be met.

6.3.16.7 Ensure the bag is labeled with isotope, dose/rate, date, and surveyor's initials.

6.3.16.8 Arrange for safe storage of the segregated material for decay, if appropriate, or until a waste broker or consultant can be hired to disposition the material.

6.3 **Reporting** – *Performed by Radiation Control Physicist.*

6.4.1 Complete a “Radiation Control Incident Report” (Attachment 3) for the incident.

6.4.2 Attach a copy of the PeakEasy spectrum results to the report.

NOTE

Per DOT SP-11406, “radioactively contaminated household wastes are not regulated in transport by DOT under its hazardous material regulations”.

6.4.3 After review by the supervising Radiation Control Physicist save an electronic copy in D:\Radiate\Share files\Duty in the current year incident folder, with the file name (RPTyyx###.rcp) where ‘yy’ is the current year, ‘###’ is the assigned incident number, and ‘rcp’ is the Radiation Control Physicist’s initials. Place a paper copy in the current year’s incident logbook.

NOTE

Special Permit forms can be downloaded from the CRCPD website as PDFs with fill-in fields. This form can be e-mailed (versus faxed) to CRCPD via bhirschler@crcpd.org.

6.4.4 Complete and file any DOT Special Permits issued utilizing the DOT Special Permit Instructions. If a DOT Special Permit was issued and segregation occurs with DEEP oversight, FAX or Email results to personnel listed on DOT Special Permit Form.

6.4.5 It is the responsibility of the issuing Radiation Control Physicist to perform any follow-up activities regarding final disposition of the material.

(NOTE: ENSURE THE CURRENT VERSION OF FORM IS USED, 2019 VERSION SHOWN BELOW – AVAILABLE ON CRCPD WEBSITE)

Annex A

DOT-SP 11406 SHIPMENT APPROVAL FORM

Approval Number _____ (Refer to SP 11406, paras. 8a-8b)

This shipment of waste contains unidentified radioactive material causing low levels of radiation outside the transport vehicle. Shipment is under Special permit DOT-SP 11406 without a determination of materials meeting or not meeting the regulatory definition of radioactive material. The shipment is a minor radiological concern based on considerations of the U.S. Department of Transportation and the state official signing this shipment approval document.

=====

DETAILS of DETECTION SITE, MATERIALS, and ORIGIN

Facility: Name _____ Type: _____
Address: _____

① Contact person: _____ Ph. _____ Fax. _____

Highway or Rail Vehicle Type: _____ Id.No.: _____

Company: _____ Operator name: _____

② Contact person: _____ Ph. _____ Fax. _____

Description of waste and release risks: _____

Radiation Measurement Date/time performed: _____

mrem/h (max) _____ location on vehicle _____

Inst.Mfgr./type/model _____ Bkg. mrem/h _____

Surveyor name: _____ Ph. _____

Shipment Origin Company: _____ Location: _____

Waste Origin: _____

③ Contact person: _____ Ph. _____ Fax. _____

=====

RADIATION CONTROL OFFICIALS (Detection, Origin, Transit, Destination States)

Detection State Official (receiving radiation detection info) Name: _____

④ Organization _____ Ph. _____ Fax. _____

Origin State Official (prior to detection) Name: _____

⑤ Organization _____ Ph. _____ Fax. _____

Transit State Official(s) (after detection) Name: _____

⑥ Organization _____ Ph. _____ Fax. _____

Destination State Official (after detection) Name: _____

⑦ Organization _____ Ph. _____ Fax. _____

=====
DESTINATION for RADIOACTIVE MATERIAL IDENTIFICATION and DISPOSITION

If carrier and shipper to this location are different than ② and ③, show info in REMARKS

Company Name: _____ Location: _____

⑧ Contact person: _____ Ph. _____ Fax. _____

=====
APPROVAL of SHIPMENT and SPECIAL CONDITIONS

Date: _____

Conditions: _____

⑨ Signature: _____ Ph. _____ Fax. _____

Title _____ Organization _____ Date _____

=====
IDENTIFICATION of RADIOACTIVE MATERIAL and DISPOSITION INFORMATION at DESTINATION

⑩ Name: _____ Title: _____ Date: _____

Organization: _____ Ph. _____ Fax. _____

=====
RECORD of TRANSMITTALS (Shipment Approvals and identification/disposition)
(Circumstances may influence distribution)

Shipment Approvals (Sent by ④ or ⑨) to (Show date sent)

OED CRCPD _____ ① _____, ② _____, ③ _____,

⑤ _____, ⑥ _____, ⑦ _____, ⑧ _____,

OTHER _____

Record of Identification and Disposition (Sent by ⑧, ⑩, or other _____) to

④ _____, ⑤ _____, ⑦ _____, OED CRCPD _____

OTHER _____

(NOTE: ENSURE THE CURRENT VERSION OF FORM IS USED, 2019 VERSION SHOWN BELOW – AVAILABLE ON CRCPD WEBSITE)

Annex A

DOT-SP 10656 SHIPMENT APPROVAL FORM

Approval Number _____ (Refer to SP 10656, paras. 8a-8b)

This shipment of scrap metal or related materials for recycle contains unidentified radioactive material causing low levels of radiation outside the transport vehicle. Shipment is under Special permit DOT-SP 10656 without a determination of materials meeting or not meeting the regulatory definition of radioactive material. The shipment is a minor radiological concern based on considerations of the U.S. Department of Transportation and the state official signing this shipment approval document.

DETAILS of DETECTION SITE, MATERIALS, and ORIGIN

Facility: Name _____ Type: _____
Address: _____

① Contact person: _____ Ph. _____
Fax. _____

Highway or Rail Vehicle Type: _____ Id.No.: _____
Company: _____ Operator name: _____

② Contact person: _____ Ph. _____ Fax. _____

Description of scrap and release risks: _____

Radiation Measurement Date/time performed: _____
mrem/h (max) _____ location on vehicle _____
Inst.Mfgr./type/model _____ Bkg. mrem/h _____
Surveyor name: _____ Ph. _____

Shipment Origin Company: _____ Location: _____

Scrap Origin: _____

③ Contact person: _____ Ph. _____ Fax. _____

RADIATION CONTROL OFFICIALS (Detection, Origin, Transit, Destination States)

Detection State Official (receiving radiation detection info) Name: _____

④ Organization _____ Ph. _____ Fax. _____

Origin State Official (prior to detection) Name: _____

⑤ Organization _____ Ph. _____ Fax. _____

Transit State Official (after detection) Name: _____

⑥ Organization _____ Ph. _____ Fax. _____

Destination State Official (after detection) Name: _____

⑦ Organization _____ Ph. _____ Fax. _____

=====
DESTINATION for RADIOACTIVE MATERIAL IDENTIFICATION and DISPOSITION

If carrier and shipper to this location are different than ② and ③, show info in REMARKS

Company Name: _____ Location: _____

⑧ Contact person: _____ Ph. _____ Fax. _____

=====
APPROVAL of SHIPMENT and SPECIAL CONDITIONS

Date: _____

Conditions: _____

⑨ Signature: _____ Ph. _____ Fax. _____

Title _____ Organization _____ Date _____

=====
IDENTIFICATION of RADIOACTIVE MATERIAL and DISPOSITION INFORMATION at DESTINATION

⑩ Name: _____ Title: _____ Date: _____

Organization: _____ Ph. _____ Fax. _____

=====
RECORD of TRANSMITTALS (Shipment Approvals and identification/disposition)
(Circumstances may influence distribution)

Shipment Approvals (Sent by ④ or ⑨) to (Show date sent)

OED CRCPD _____ ① _____, ② _____, ③ _____,

⑤ _____, ⑥ _____, ⑦ _____, OTHER _____

Record of Identification and Disposition (Sent by ⑧, ⑩, or other _____) to

④ _____, ⑤ _____, ⑦ _____, OED CRCPD _____

OTHER _____

RADIATION CONTROL INCIDENT REPORT

REPORT #:
DOT Exemption:

EVENT DATE AND TIME:

LICENSEE:
ADDRESS OF LICENSEE:

LICENSE #:

INCIDENT LOCATION:
AND PHONE#:

PARTIES INVOLVED:

JOB TITLE:

INSTRUMENTS USED AND CALIBRATION DUE DATES:

<u>MFG</u>	<u>Model</u>	<u>Serial</u>	<u>Cal Due</u>	<u>BKG</u>
------------	--------------	---------------	----------------	------------

ISOTOPE(S):

ACTIVITY:

N.R.C. NOTIFICATION:

OVEREXPOSURE:

PERSONAL INJURY:

RELEASE OF RADIOACTIVE MATERIAL > ATTACHMENT B quantities:

FACILITY DAMAGE:

LICENSE LOSS OF WORK TIME:

LICENSE VIOLATION:

OTHER FEDERAL, STATE OR MUNICIPAL AGENCIES INVOLVED:

TOTAL MAN REM. RECEIVED:

DESCRIPTION OF OCCURRENCE:

IMMEDIATE ACTIONS:

IMMEDIATE RESULTS:

SECONDARY ACTIONS:

SECONDARY RESULTS:

FOLLOW-UP ACTIONS:

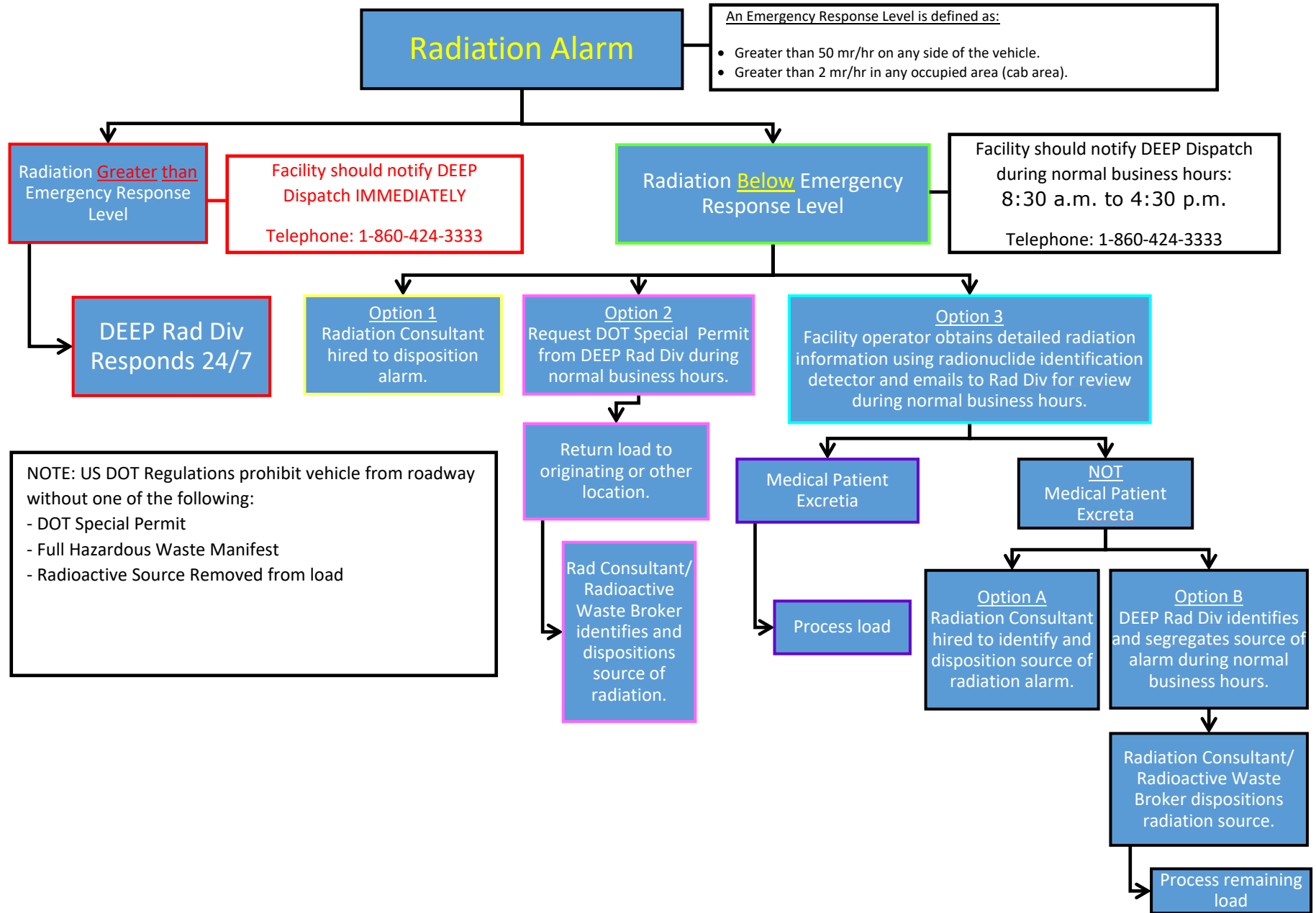
FOLLOW-UP RESULTS:

FINAL DISPOSITION: This incident is:

SUBMITTED BY: _____ Date: _____

REVIEWED BY: _____

Attachment 4 - DEEP Radiation Division Waste Incident Response Decision Chart





79 Elm Street • Hartford, CT 06106-5127

www.ct.gov/deep

Affirmative Action/Equal Opportunity Employer

FOR LAW ENFORCEMENT CSPD BROADCAST

VIA: Fax ___-___-___ Email _____
 Phone ___-___-___ Other _____

TO: All Connecticut DMV and CSP Truck Squads

FROM: Connecticut DEEP, Radiation Division

SUBJECT: Notification of Radioactive Shipment Under DOT Special Permit

This is to advise all enforcement personnel that a special permit to ship radioactive materials has been issued under USDOT SP 11406 or SP 10656.

DOT-SP 11406 ___-___-___-___ or DOT-SP 10656 ___-___-___-___

Carrier Name: _____

Vehicle Make: _____

Vehicle Registration(s) _____

Date and Time Issued _____ (Use 24 hour time)

Expiration Date and Time _____ (Use 24 hour time)

Route: _____

If vehicle is encountered on any other highways, during this period, please notify DEEP at 860-424-3029 during business hours or 860-424-3333 on nights and weekends

Name of DEEP Official: _____

BROADCAST AUTH: _____

ATTACHMENT 6

Approved Medical Radioisotopes in solid waste allowed for incineration.

Isotope	Half-Life
Ga-67	3.62 Days
I-123	13.27 Hours
I-131	8.02 Days
In-111	2.8 Days
Tc-99m	6.01 Hours
Zr-89	78.41 Hours
Ra-223*	11.44 Days
Lu-177*	6.73 Days
Th-227*	18.7 Days

*- The Identifinders may mis-identify: 1) Ra-223 and Th-227 because they are in the U-235 decay chain and 2) Lu-177 which has a gamma spectrum similar to Pu-239. Both U-235 and Pu-239 are fissile isotopes but Ra-223, Th-227 and Lu-177 are not.

Attachment 7 – Job Aid - Special Permit Processing

1. Prerequisites
 - a. Material/ info needed
 - i. Current Special Permit form
(<https://www.crcpd.org/page/Transportation>), either:
 1. US DOT Special Permit SP 10656 re: scrap for recycling or
 2. US DOT Special Permit SP 11406 re: waste for disposal
 - ii. Contact information required by the special permit
 - iii. “Authorities Registered to Approve DOT Special Permit Shipments”, mustard colored book from CRCPD (or <https://www.crcpd.org/page/Transportation>),
 - iv. Radiation limits:
 1. < 50 mrem/hr on any external surface of vehicle and
 2. < 2 mrem/hr in any occupied space
2. Completion of Special Permit
 - a. Special permit approval numbers can be pulled from the waste incident log. Use the next sequential number and the format CT-ST-YY-###, where:
 - i. CT represents state of origin (may be a State other than CT)
 - ii. ST represents state of destination
 - iii. YY represents year
 - iv. ### represents the sequential number of the shipment for that year between those states
 1. Eg – CT-RI-20-001,
 - b. The facility the shipment is at may have partially completed the special permit. They will send a copy. For details, contact:
 - i. Facility (current location of vehicle)
 - ii. Shipment origin
 - iii. State Radiation Control Officer(s) (to notify that shipment is coming)
 - c. Identify any special conditions to the driver (eg – most direct route, no unnecessary stops, placement of special permit sign – posted on 2 opposing sides of truck)
 - d. E-mail:
 - i. Completed permit to facility and driver
 - ii. Special permit sign – containing special permit number and “Radioactive” - must be conspicuously posted on two opposing sides of the vehicle.
 - e. Send a copy of the permit to (as applicable):
 - i. Applicable state radiation control officers from mustard CRCPD book
 - ii. Facility
 - iii. Origin
 - iv. CRCPD, Office of Executive Director
3. Followup
 - a. Destination facility will provide an assessment of the source for inclusion in incident report. Assessment may be provided by waste brokers on following page.
 - b. Write up incident report

Radioactive Waste Broker & Decontamination Services¹

CRCPD Notes of March 20, 2020

Firm ²	Served ³	Contact	Voice Phone	E-mail	Mail out Leak Test Kit	Disassemble Devices	Decon/Remediate Bldgs & Grounds	Decom Vehicles	Deal with Radium Devices	Deal with Mixed Waste	Store for Decay	Assist with Import/Export	Calibr Rad'n Meters	Provide Trng	Encapsulate as Spec Form	Has QA Approval from WCS
Ameriphysics	E & Mid-W	Chris Brandjes	TN 865/470-4176	cbrandjes@ameriphysics.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Applied Health Physics	All Regions	Brandon Woods	PA 412/835-9555	ahp.inc@comcast.net	Yes	Some	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
BBB Environmental Safety, Inc.	All	Willie Bremer	CA 209-858-5806	willie@bbbsafety.com	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes		Yes
Bionomics	E & Mid-W	John McCormick	TN 865-220-8501	bionomicsjohn@comcast.net	No	Some	Yes	No	Yes	Yes	No	No	No	Yes		Yes
Chase Environmental	All	John O'Neil	TN 865/816-6015	joneil@chaseenv.com	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes		Yes
Curie Environmental Services	All	Scott Logan	NM 505-888-9392	scott.logan@curieservices.com	no	some	some	yes	yes	yes	yes	yes	no	NORM	No	
DeNuke Services	All	Paul Jones	TN 865/813-1416	paul@denuke.com	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes		Yes
Ecology Services	All	Paul Marshall	MD 800/932-7299	pmarshall@ecologyservices.com	Yes	Some	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Energy Solutions (Duratek)	East	Donnie Brackett	TN 865/220-1526	dbrackett@energysolutions.com	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes		Yes
Environ. Mgt. Ctrls. (EMC)	N,CA,NV,CO	Danny Quayle	TN 865/425-4563	dquayle@energy.com	Yes	No	Some	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Environ. Mgt. Services	All	Richard Gallego	CA 714-987-8090	rgallego@tgainc.com	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No		Yes
NORM Services	All	Thom Dias	CA 510/828-4962	tdias@sbglobal.net	No	No	Yes	Yes	Yes	Yes	No	No	No	No		No
New Order Environmental Serv	All	Robert Krumberg	CO 303/828-6616	rkrumberg@normservices.com	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes		No
New World Technol.	West	Landen Collins	NM 585/738-8448	Landen@newworldenvironmental.com	No	No	Yes	Yes	Yes	Yes	No	No	No	Some	No	No
NSSI	All	Mike Wilson	CA 925/443-7967	mike@newworld.org	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Permafex Env. Services, Inc.	All	Gamaliel Torres	TX 713/641-0391	gtorres@nssihouston.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Philotechnics	All	Jeff Bowers	TN 865-216-1857	jbowers@perma-fix.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
	All	Meghan Turvey	TN 865/285-3064	mturvey@philotechnics.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
	All	Robert Trimble	CA 858/586-2582	rstrimble@philotechnics.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Plexus Scientific Corporation	All	Bill Thomas	MD 443-319-8068	bill.thomas@plexsci.com	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes		No
Qal-Tek Associates	All	Travis Snowder	ID 208/523-5557	tsnow@qaltek.com	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes		Yes
Rad Solutions LLC	All	Gaye Nelson	CA 209-678-6782	radolutions59@gmail.com	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No		No
Radiac Research	N-East	Art Green	NY 718/963-2233 x207	agreen@radiacenv.com	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No		Yes
Radiation Safety Assoc.	Atlantic	Paul Steinmeyer	CT 860/728-0487	kpstein@radpro.com	Yes	Yes	Yes	Yes	Some	Yes	No	Yes	Yes	Yes		Yes
Radiation Solutions, LLC	All	Jon O'Rullivan	ID 208-206-3203	jonorullian@radiationsolutionsonline.com	Yes	Yes	No	No	Yes	Yes	No	Yes	No	Yes		No
RAM Services	All	Jerry Wiza	WI 920/686-3889	jwiza@ramservicesinc.com	Yes	Yes	Some	No	Yes	No	No	Yes	Yes	Yes		Yes
R.M. Wester	Mid-West	Joe Koch	MO 636/928-9628	jkoch@rmwester.com	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes		Yes
Rocky Mt. H.P. Consultants	Rocky Mts.	Edd Johnson	UT 801/560-3778	edsgared@aol.com	Yes	Yes	No	No	Yes	No	T1/2-120d	No	Yes	Yes		Yes
RSO, Inc.	East	David Wellner	MD 301/953-2482 x306	dwellner@rsolinc.com	Yes	No	.	.	Yes	Yes	Yes	Yes	Yes	Yes		Yes
	East	Greg Smith	MD 301/953-2482 x322	gsmith@rsolinc.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
SECURE Energy Services	Mid-West	Kurt Rhea	CO 303-353-1979	krhea@secure-energy.com	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes		Yes
Solulent Technologies	All	Dell Reuss	OH 330/497-5905	info@solulenttech.com	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Some		Yes
Thomas Grey Assoc.	West	Richard Gallego	CA 714/997-8090	rich@tgainc.com	Yes	Some	Yes	Yes	Yes	Yes	T1/2-90d	No	No	Yes		Yes
US Ecology, Inc.	All	Joe Weismann	ID 208-331-3400	joe.weismann@usecology.com	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes		No
Veolia	All	Liza Krass	NJ 973-691-7333	liza.krass@veolia.com	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes		No
Visionary Solutions, LLC	All	Anne Weaver	TN 865-482-8670	aweaver@vs-llc.com	No	No	Yes	No	Yes	Yes	No	No	No	Yes		Yes
Waste Cont'l Specialists LLC	All	Thomas Hanna	TX 432/525-8650	hanna@wctsexas.com	No	No	No	Some	Yes	Yes	Yes	Yes	No	No		Yes

1 All firms inspect materials, identify radionuclides, deal with leaking sources and associated contamination, provide packaging, contract for manufacturer's acceptance or waste processing and disposal as applicable, arrange transport and disposal permits, and report material transfer. Additional firms that specialize in NORM scale are on www.crcpd.org 'Free Documents,' 'Commercial Services,' see 'Radioactive Site Investigation and Decontamination Services.' Energy Solutions has a program for rental of radiation meters and other instruments. <http://www.shopping.netsuite.com/Instrumentation>

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3 Principal region served: North-East = north of Virginia, East = east of Mississippi River, Mid-west = from Rocky Mt. to Appalachians, West = west of great plains.

Attachment 8 – Job Aid -Hot Load Visit

- 6 Prerequisites
 - 6.1 Discuss with Supervisor
 - 6.2 Equipment to bring (as appropriate)
 - 6.2.1 Identifinder (charged up)
 - 6.2.2 Ion Chamber or hot dog probe w/ 14C
 - 6.2.3 14C rad detector kit
 - 6.2.4 Duct Tape
 - 6.2.5 Laptop w/ Peakeasy and multi-port connector
 - 6.2.6 PPE (may need glasses, safety shoes, Tyvek suits, gloves, etc)
 - 6.2.7 Muck boots (maybe/ maybe not)
 - 6.2.8 Appropriate respiratory protection (dust/ N95/ full-face)
 - 6.3 Perform functional check with ion chamber and 14C equipment prior to departing for destination
- 7 Actions on arrival
 - 7.1 Talk to Scale House operator (as applicable) for details
 - 7.2 Put on safety vest (visibility) and other PPE as appropriate (especially if load is being tipped)
 - 7.3 Use NaI detector in 14C kit or RIID to find hot spot if dose rates are too low
 - 7.4 Using ion chamber or hot dog probe, identify highest dose rates in cab and around trailer. (>2 mr/hr in Cab or > 50 mr/hr outside vehicle – contact your supervisor)
 - 7.5 Get RIID close enough that the rate display indicator shows you are in the acceptable range
- 8 If source is identified as medical waste per Attachment 6 of RCP-403 then:
 - 8.1 Discuss with driver if trash is from:
 - 8.1.1 normal waste pickup (medical patient excreta) or
 - 8.1.2 hospital
 - 8.1.2.1 if hospital try to find out which one. Potential hospital violation.
 - 8.2 Waste facility may:
 - 8.2.1 Allow it to be processed
 - 8.2.2 Segregate the waste onsite for decay
 - 8.2.3 Require it be removed
 - 8.2.3.1 See attached CRCPD listing for radwaste brokers. Many facilities use RSA (Paul Steinmeyer 860-228-0487 (w), 860-885-9871 (c)) for segregation and storage
- 9 Followup
 - 9.1 Write up incident report

CRCPD Notes of March 20, 2020

Radioactive Waste Broker & Decontamination Services¹

Firm ²	Served ³	Contact	Voice Phone	E-mail	Mail out Leak Test Kit	Disassemble Devices	Decontaminate Bldgs & Grounds	Decon Vehicles	Deal with Radium Devices	Deal with Mixed Waste	Store for Decay	Assist with Import/Export	Calibr Rad'n Meters	Provide Trng	Encapsulate as Spec Form	Has QA Approval from WCS
Ameriphysics	E & Mid-W	Chris Brandjes	TN 865/470-4176	cbrandjes@ameriphysics.com	Yes	some	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Applied Health Physics	All Regions	Brandon Woods	PA 412/835-9555	ahp.in@comcast.net	Yes	some	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes		
B&B Environmental Safety, Inc.	All	Willie Bremer	CA 209-858-5806	willie@bbsafety.com	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Bionomics	E & Mid-W	John McCormick	TN 865-220-8501	bionomicsjohn@comcast.net	No	Some	Yes	No	Yes	Yes	No	No	No	Yes	Yes	Yes
Chase Environmental	All	John O'Neil	TN 865/816-6015	john@chaseenv.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	
Curie Environmental Services	All	Scott Logan	NM 505-888-9392	scott.logan@curieservices.com	No	some	some	Yes	Yes	Yes	Yes	Yes	No	NORM	No	
DeNuke Services	All	Paul Jones	TN 865/813-1416	paul@denuke.com	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ecology Services	All	Paul Marshall	MD 800/932-7299	pmarshall@ecologyservices.com	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Energy Solutions (Duratek)	East	Donnie Brackett	TN 865/220-1526	dbrackett@energysolutions.com	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Environ. Mgt. Ctrs. (EMC)	N.CA,NV,CO	Danny Quayle	CA 865/425-4563	dquayle@energysolutions.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Environ. Mgt. Services	All	Richard Gallego	CA 714-987-8090	rgallego@gainc.com	Yes	No	Some	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Environ. Mgt. Services	All	Thom Dias	CA 510/828-4962	diasd@sbgllobal.net	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
NORM Services	All	Robert Krumberg	CO 303/828-6616	rkrumberg@normservices.com	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Some	No	No
New Order Environmental Serv	All	Landen Collins	NM 585/738-8448	landen@neworderenvironmental.com	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No
New World Technol.	West	Mike Wilson	CA 925/443-7967	mike@newworld.org	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NSI	All	Gamaliel Torres	TX 713/641-0391	gtorres@nssi-houston.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Permafrix Env. Services, Inc.	All	Jeff Bowers	TN 865-216-1857	jbowers@permafrix.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Philotechnics	All	Meghan Turvey	TN 865/285-3064	mturvey@philotechnics.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Some	Yes	Yes
Plexus Scientific Corporation	All	Robert Trimble	CA 858/586-2582	rtrimble@philotechnics.com	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Qal-Tek Associates	All	Bill Thomas	MD 443-319-8068	bill.thomas@plexsci.com	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Rad Solutions LLC	All	Travis Snowder	ID 208/523-5557	tsnow@qaltek.com	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Radiac Research	N-East	Gaye Nelson	CA 209-678-6782	radolutions59@gmail.com	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No
Radiation Safety Assoc.	Atlantic	Art Green	NV 718/963-2233 x207	agreen@radiacenv.com	Yes	Yes	Yes	Yes	Yes	Some	Yes	Yes	Yes	Yes	Yes	Yes
Radiation Solutions, LLC	All	Paul Steinmeyer	CT 860/228-0487	kpstein@radpro.com	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
RAM Services	All	Jon O'Rullivan	ID 208-206-3203	jonorullian@radiationsolutionsonline.com	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
R.M. Wester	All	Jerry Wiza	WI 920/686-3889	jwiza@ramservicesinc.com	Yes	Yes	Some	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Rocky Mt. H.P. Consultants	Mid-West	Joe Koch	MO 636/928-9628	jkocho@rmwester.com	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
RSO, Inc.	Rocky Mts.	Edd Johnson	UT 801/560-3778	edj@edjohnson.com	Yes	Yes	No	No	Yes	No	T½<120d	No	Yes	Yes	Yes	Yes
SECURE Energy Services	East	David Wellner	MD 301/953-2482 x306	dwellner@soinc.com	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Solutient Technologies	Mid-West	Greg Smith	MD 301/953-2482 x322	gsmith@soinc.com	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Thomas Grey Assoc.	All	Kurt Rhea	CO 303-353-1979	krhea@secure-energy.com	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes	No	Some
US Ecology, Inc.	West	Deil Reuss	OH 330/497-5905	info@solutienttech.com	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	T½<90d	Yes
Visionary Solutions, LLC	All	Richard Gallego	CA 714/997-8090	rich@gainc.com	Yes	Some	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Waste Cont'l Specialists LLC	All	Joe Weismann	ID 208-331-3400	joeweismann@usecology.com	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
	All	Liza Krass	NJ 973-691-7333	liza.krass@veolia.com	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No
	All	Anne Weaver	TN 865-482-8670	aweaver@vs-llc.com	No	No	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
	All	Thomas Hanna	TX 432/525-8650	hanna@wctexas.com	No	No	No	Some	Yes	Yes	Yes	Yes	No	No	Yes	Yes

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