



# SAN DIEGO

## HAZARDOUS INCIDENT RESPONSE TEAM

### STANDARD OPERATING GUIDELINES



#### LANDFILL ALARM

	ITEM	DESCRIPTION
<input type="checkbox"/>	INITIAL SIZE UP	<ul style="list-style-type: none"> <li>Readings from landfill monitor _____ CPM _____ mr/hr</li> <li>Truck isolated? If not request to do so.</li> <li>Known isotope?</li> <li>Exposures / Injuries</li> <li>Company name and driver name?</li> <li>Route map for pickups available?</li> </ul>
<input type="checkbox"/>	PROTECTIVE MEASURES	<ul style="list-style-type: none"> <li>Isolate / Deny Entry: Isolate truck out to 75'. Distance is your best protective measure.</li> <li>ERG Number: 161-166</li> <li>Shelter in Place: NA</li> <li>Evacuation: NA</li> <li>Upwind / Upgrade</li> </ul>
<input type="checkbox"/>	MONITORING & DETECTION	<ul style="list-style-type: none"> <li>Multi Rae Pro with radiation detector</li> <li>Detection: Identifinder, Victoreen, Ludlum, Ortec, Pager</li> </ul> <p>Units: Micro, Mili and Rem            1 micro Rem (<math>\mu</math>Rem)            1000 Microrem (<math>\mu</math>Rem) = 1 miliRem (mRem)            1000 (mRem) = 1 Rem (R)</p> <p>Action Levles</p> <p>3-4 Times Background indicates some radiation contamination is present            &gt;2 mRem defines the Hot Zone            5 Rem- Annual Dose limit            10 Rem- to save critical property.            25-50 Rem to save a life, this is voluntary.</p>
<input type="checkbox"/>	PERSONAL PROTECTIVE EQUIPMENT	<ul style="list-style-type: none"> <li>Level D if contained in the truck with disposable nitrile gloves</li> <li>If loose and an inhalation hazard level C</li> </ul>
<input type="checkbox"/>	TACTICAL ACTIONS	<ul style="list-style-type: none"> <li>Establish exclusion zone to be set at 2 mr/hr.</li> <li>Establish support zone to be set where reading is equal to ambient background.</li> <li>Responders on scene should be wearing appropriate dosimetry during response</li> <li>Interview the driver, gather information of the type of loads and location(s) picked up, request a copy of the route sheet that clearly identify the locations picked up. Collect contact information for the driver in case follow-up is required.</li> <li>Obtain a background reading far from the implicated vehicle.</li> <li>Approach the vehicle slowly and in survey mode. Scan the outside of the vehicle in question. Document the readings to verify the radiation rate is at or below background readings.</li> <li>Measure the radiation readings at the driver's seat area and document for potential exposure issues.</li> <li>Scan the outside of the vehicle in question. Use a grid format to ensure full coverage. Document the highest reading at the surface of the vehicle with a marker. You may need a ladder for hot spots high up on the truck.</li> </ul>

		<ul style="list-style-type: none"> <li>Identify the isotope as soon as possible using spectra collection equipment (Identifinder or Ortec MicroDetective HPGe). If using the identiFINDER, identification readings should be collected with each library and document the predominate isotope identified.</li> <li>Verify rate readings and isotope identification with a second monitor if possible.</li> <li>Initiate Technical Reachback if necessary, including: background readings, source readings and check-source readings for reachback. If a Neutron source is reported, request law enforcement to secure the area.</li> <li>Contact the Senior DEH Health Physicist or alternative DEH representative with background, alarm readings, highest reading outside the vehicle and the identified isotope in each library for further action.</li> <li>If onsite burial is approved, the source will be transported to the “face of the landfill” so further less-shielded readings may be obtained if required by the Health Physicist. Medical Isotopes with short half-lives are generally authorized for direct burial in a special dug hole</li> <li>When allowed by the health physicist, the material should be buried in an approved area of the landfill. The landfill operator should have a burial pit excavated in the face of the landfill to receive the radioactive load of trash. Upon offloading the contaminated trash should be immediately covered with non-contaminated trash to prevent the spread of contamination and exposure.</li> <li>If burial is approved, re-scan the empty vehicle to see if there is residual contamination.</li> <li>If contamination exists: identify the area, wear proper PPE and clean the area in question. Solids: Bag the contaminated material and place into the same hole at the face of the landfill. Liquids: consider using a water truck or fire engine to rinse contaminated liquids from the contaminated truck. This should be done in an area where the rinse water can be easily covered with non-contaminated trash, or top cover. Suggest conducting this at the face of the landfill near the special hole.</li> <li>Rescan the truck to ensure the readings are at background radiation. Advise the driver to rescan the truck through the radiation detectors at the landfill entrance to verify the contamination is not present. Trucks with residual contamination that cannot be easily decontaminated may be parked at the landfill to allow for radiological decay. This should be done in coordination with the hauler, landfill operator, and DEH Radiation Health.</li> </ul> <p>Recovering the isotope:</p> <ul style="list-style-type: none"> <li>If the isotope requires recovery set up a large area of plastic to drop the trash load.</li> <li>Dress out the responders in appropriate PPE to keep them clean from the trash, level C with N95/P100</li> <li>Once the isotope is located, if safe to do so place in a lead pig for safe keeping.</li> <li>The DEH Senior Health Physicist will provide direction on proper disposal. HIRT should not take custody of the source unless authorized by the health physicist. If necessary, locate an appropriate storage site at the landfill.</li> </ul>
<input type="checkbox"/>	<b>DECONTAMINATION</b>	<ul style="list-style-type: none"> <li>Conduct dry decon and scan all personnel at scene to ensure all contamination has been properly removed</li> <li>Place any contaminated ppe in drum liners and leave onsite, properly labeled and secured.</li> <li>Coordinate disposal with the DEH Health Physicist</li> </ul>
<input type="checkbox"/>	<b>MITIGATION AND CONTAINMENT</b>	<ul style="list-style-type: none"> <li>Consider large sheets of plastic to recovery isotope</li> <li>Consider lead pig to contain source</li> </ul>
<input type="checkbox"/>	<b>TECHNICAL REFERENCES</b>	<ul style="list-style-type: none"> <li>ERG <a href="https://cameochemicals.noaa.gov/erg_guides/en/Guide_162.pdf">https://cameochemicals.noaa.gov/erg_guides/en/Guide_162.pdf</a></li> <li>NIOSH</li> <li>WISER <a href="https://webwiser.nlm.nih.gov/getHomeData.do">https://webwiser.nlm.nih.gov/getHomeData.do</a></li> <li>Chemical Protective Clothing Guide</li> <li>Rad Responder Link <a href="https://www.radresponder.net/">https://www.radresponder.net/</a></li> <li>DOT <a href="https://www.remm.nlm.gov/transportation_hazard_id.htm">https://www.remm.nlm.gov/transportation_hazard_id.htm</a></li> </ul>

		<table><tr><th>ISOTOPE</th><th>TYPE</th><th>HALF LIFE</th><th>RAD TYPE</th></tr><tr><td>Iodine 131</td><td>Medical</td><td>8 days</td><td>Beta</td></tr><tr><td>Technetium</td><td>Medical</td><td>6 hrs</td><td>Beta</td></tr><tr><td>Cesium 137</td><td>Industrial</td><td>30 yrs</td><td>Beta, Gamma</td></tr><tr><td>Americium</td><td>Industrial</td><td>432 yrs</td><td>Alpha</td></tr><tr><td>Uranium 235</td><td>WMD</td><td>703 mil yrs</td><td>Alpha</td></tr><tr><td colspan="4"></td></tr></table>	ISOTOPE	TYPE	HALF LIFE	RAD TYPE	Iodine 131	Medical	8 days	Beta	Technetium	Medical	6 hrs	Beta	Cesium 137	Industrial	30 yrs	Beta, Gamma	Americium	Industrial	432 yrs	Alpha	Uranium 235	WMD	703 mil yrs	Alpha				
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<input type="checkbox"/>	NOTIFICATIONS	<ul style="list-style-type: none"><li>▪ DEH - Radiation Health Physicist (858) 505-6657 (desk)</li><li>▪ CAL OES (800) 852-7550 for release reporting if needed</li><li>▪ Fire Department</li><li>▪ FBI/Law Enforcement if Neutron source found</li></ul>																												
<input type="checkbox"/>	CLEAN UP & DISPOSAL	<ul style="list-style-type: none"><li>▪ Responsible Party: Business and Driver name, address, phone number</li><li>▪ Landfill contact name, address, phone number</li><li>▪ Medical isotopes will be approved by the DEH Senior Health Physicist for immediate on-site burial.</li><li>▪ Industrial sources will be properly disposed by DTSC or FED EPA as needed.</li><li>▪ Consult DEH HIRT Supervisor on enforcement case if linked to a responsible party: manifests, photographs, monitoring results</li></ul>																												
<input type="checkbox"/>	INCIDENT TERMINATION	<ul style="list-style-type: none"><li>▪ Verify burial area and vehicle are at background levels</li><li>▪ Notify the trash company if the vehicle is still contaminated and further mitigation is needed i.e. washing the vehicle on-site. Re-survey and consult Radiation Health if levels are still above background.</li></ul>																												
<input type="checkbox"/>	BACKGROUND INFORMATION	<p>Radioactive materials emit one or more of four types of harmful radiation: alpha, beta, gamma and/or neutron. Landfill radiation detectors are set at 5 times background. In most cases, the radiation is from a medical source and has a short half-life (Iodine (I)-131 or Technetium (Tc)-99). The DEH’s Community Health Division (CHD) employs a Senior Health Physicist who should be contacted to determine disposition of all sources of radiation including those that create an alarm at a landfill. There is also a CHD regulator (the Local Enforcement Agency (LEA)) responsible for the legal operation of each active and closed landfill. Remember: No two landfills are alike.</p> <p>Alpha and Beta radiation are particles that are especially harmful if ingested or inhaled. If radioactive materials are suspected at an incident scene, the area must be monitored. A radiation health physicist and the DEH-HIRT should be called to the scene. Gamma and Neutron radiation easily passes through clothing and human tissue and can cause serious permanent damage to the body if in high enough concentration.</p> <p>The dose of radiation absorbed by an exposed individual depends on four factors: (1) the type of radiation; (2) the length of exposure (Time); (3) the (Distance) from the source; and (4) the presence of any intervening barriers (Shielding).</p> <p>Maximizing and increasing the distance between the source and individual is the most effective means of limiting exposure. Conformation of the safest distance can only be accomplished with instrumentation. An exposure rate equal to ambient background reading is considered adequate distance.</p> <p>Department of Energy (DOE) or Department of Defense (DOD) escorted shipments may also be shipped in combination with explosive and radioactive materials. If encountering an accident involving a DOD or DOE shipment, if there are guards present and they are not incapacitated, follow their recommendations with regard to safety and mitigation of hazards.</p>																												