

## App. 2 Response strategies and their effect on waste generation

Clean-up technique		Effect on waste stream	Type of waste generated
<p>Dispersant application</p> 	<p>Dispersant chemicals are used to break down the oil slick into small droplets so that the diluting effect of the ocean is better able to reduce hydrocarbon concentrations. This strategy will not work with all oils and is not appropriate for use in certain environments.</p>	<p>Waste concentrations are minimal as the oil is suspended in the water column and allowed to biodegrade naturally.</p>	<ul style="list-style-type: none"> <li>● No hydrocarbon waste is generated.</li> <li>● PPE</li> <li>● Empty dispersant drums/considerations</li> </ul>
<p>At sea response operations</p> 	<p>Recovery devices, e.g. booms and skimmers, are deployed from ships or small craft to recover oil from the sea surface. Suitably sized storage systems may be needed which, in the case of highly viscous or waxy oils, will require heating elements. Transfer systems and reception facilities will also be needed to sustain operations over the long term.</p>	<p>Recovery operations will potentially give rise to a large quantity of waste oil and water for treatment. The volume of the storage systems available must be consistent with the recovery capacity of the skimmers. The type of oil spilled will have an effect on the resultant waste; viscous and waxy oils in particular will entrain debris and can create large volumes of waste. They can also present severe handling difficulties.</p>	<ul style="list-style-type: none"> <li>● Oiled equipment/vessels</li> <li>● Oiled PPE and workforce</li> <li>● Recovered oil</li> <li>● Oily water</li> <li>● Oiled vegetation</li> <li>● Oiled sorbent materials</li> <li>● Oiled flotsam and jetsam</li> <li>● Animal carcasses</li> </ul>
<p>Shoreline clean-up</p> 	<p>Oils are recovered from shorelines either using mechanical or manual means. Manual recovery is the preferred method because it has the effect of minimizing the amount of waste generated. Machines can be used to transport the waste from the shoreline to the primary storage site. Portable tanks or lined pits can be used to consolidate recovered oil at the operating site. The shoreline type, and degree of access to it, will dictate the types of strategies used which, in turn, will determine the amount of waste recovered.</p>	<p>The type of spilled oil will often have a profound effect on the amount of oily waste generated. Waste segregation and minimization techniques are critical to ensure an efficient operation. These should be established at the initial recovery site and maintained right through to the final disposal site otherwise waste volumes will spiral out of control. Waste sites should be managed in such a way as to prevent secondary pollution.</p>	<ul style="list-style-type: none"> <li>● Oiled equipment/vessels</li> <li>● Oiled PPE and workforce</li> <li>● Recovered oil</li> <li>● Oiled vegetation</li> <li>● Oily water</li> <li>● Oiled sorbent materials</li> <li>● Oiled beach material: <ul style="list-style-type: none"> <li>• sand</li> <li>• shingle</li> <li>• cobbles</li> </ul> </li> <li>● Oiled flotsam and jetsam</li> <li>● Animal carcasses</li> <li>● Oiled transport</li> </ul>
<p><i>In-situ</i> burning</p> 	<p>This involves a strategy of burning spilled oil using fire booms to thicken the oil layer to sustain combustion. Weathering and emulsification of oil will inhibit the process. The strategy cannot be used on all oil types or in all environments. The resultant air pollution and the production of viscous residues can limit the application of the strategy.</p>	<p><i>In-situ</i> burning can reduce the amount of oil in the environment. However, the remaining material may be more persistent.</p>	<ul style="list-style-type: none"> <li>● Burnt oil residues</li> <li>● Oiled/fire damaged boom</li> <li>● Oiled vessel</li> <li>● Oiled PPE</li> </ul>

**Table 12 : Response strategies and their effects on waste generation**

Source IPIECA, guidelines for Oil Spill Waste Minimization and Management, Report Series, vol. 12.