

TG n°3 Waste minimization during recovery

Various actions can reduce the amount of generated waste with significant results.

Minimizing contamination and secondary spreading

- ↪ **Sites at risk can be, before any groundings of oil, cleared of seaweeds, debris and rubbish to reduce the final amount of contaminated material.**
Depending on the quantity of material to be cleared, this recovery is carried out either manually, with mechanical support for waste removal, or mechanically using public works machinery equipped with a claw or a wire loader or using specialised machinery such as sand screeners, mechanical rakes, etc. This recovery must of course be as selective and methodical as possible, so as to comply with the different disposal or upgrading categories. Natural groundings can sometimes simply be moved to the upper beach, if the site allows it.
- ↪ **Avoid secondary contamination of un-polluted areas by methodical management:**
 - protecting ground from contamination by polluted machinery and personnel by lining and channelling access and establishing traffic circulation plan for vehicles;
 - using watertight decontamination area to clean personnel and machinery before they leave the clean-up area (designation of “clean”, “decontamination” and “dirty” zones);
 - protecting clean ground from projections during on site oil collection or washing operations.

Recycling equipments

- ↪ Reusable Personal Protective Equipments should be utilized where appropriate, such as rubber boots, gloves, etc. that should be wiped at the end of each day with rags dipped in gasoil, rinsed and dried.
- ↪ Recovery equipment should be cleaned in the same way and reused rather than discarded (bins, shovel, etc.).

Choosing selective techniques and in situ handling of oily material

- ↪ Encourage selective collection, for example for liquid oil is normally collected with large volumes of seawater. Selective collection and primary separation on site of oil and water can very often be improved and allows reducing significantly the volume to be transported and treated. For example, in many cases, conventional vacuum tanks, as used in agriculture or sanitation, are particularly effective in a wide range of situations, in ports and harbours or on beaches, to remove the pollutant from the water surface. To avoid pumping large quantities of water with the oil, they can be equipped with a floating suction head. In any case, primary separation of oil and water must take place on site, by allowing the mixture to settle and then removing water from the tank itself by draining off the water periodically from the bottom of the container to maximise the capacity of the truck.
- ↪ Encourage in-situ handling of oily material using various specific techniques, e.g.:
 - Flushing of oiled sediments (for buried oil in fine to coarse sand) consists of using a flushing gun to inject a water and air mix into the sand to remobilize to the surface the oil trapped in the sediment. The resurfacing oil is recovered at the surface of the beach using either sorbent and/ or skimmer.
 - Surfwashing (for pebbles, shingle and sand) consists in moving the polluted sediments into the surf zone using loaders. The energy of the breaking waves “cleans” the sand, remobilises the oil and redistributes the sand across the beach. The oil tends to be

deposited along the high tide mark (from where it should be removed as soon as possible) or carried away by long shore currents (in such cases, oil should be contained and recovered using skimmers and/or sorbent material). The disturbance to the beach is only temporary: the sea usually moves the sediments back close to their original location, rebuilding the slope of the beach. However, this technique, which relies on natural dynamic processes, poses certain geomorphologic risks (i.e. erosion of the beach) in the event of poor implementation. It should therefore be carried out during a favourable tidal period under the control of geomorphology experts who can define the feasibility of the technique and methods on a case-by-case basis according to the local sedimentary and oceanographic characteristics.

- Washing of pebbles and shingle on site consists of washing the polluted stones using a high pressure cleaner within an installation, or “cage” built on site, which directly recovers the effluents (instead of removing the oiled stones from the beach). This “cage” is a light metal frame with a perforated metal base, on which the stones are washed, and three lateral sides, covered with geotextile, to contain the spray of effluents and oil. All the washing effluents pass through the base and are collected using sorbent material placed in a recovery device set up under the washing cage. Small stones can be placed in plastic mesh bags, such as oyster bags placed on sorbent material, which are turned over during washing, to stop them from being projected out of the cage, when using high pressure cleaners.



Washing of pebbles on site (Source: Cedre)

- Sand sieving by beach cleaning machines is useful for tar balls (non sticky). Various models exist, ranging from large screeners (either towed, mounted or self-propelled) to small self-propelled screeners (sieving can also be achieved manually depending on the level of contamination). Most of them function via the same principle: the surface layer of sand is removed by an adjustable blade, then lifted by a continuous conveyor belt, on which the screening takes place, and the refuse is collected at the end of the stroke of the belt. Although the performance of the different models of sand screeners may vary, the quality of screening does not only depend on the machine (the tractor, which must have certain particular characteristics), but also on the operator in charge of making the appropriate adjustments; both play an equally important role. One must also consider that this technique is non-selective and will remove any objects of a certain size, therefore potentially increasing the amount of waste and removing living organisms and sea weed essential to the ecosystems of sandy beaches.