

SAND SCREENING USING SPECIALISED MACHINERY

N 08

SCOPE

Substrate: homogeneous fine-grain sand
Pollution: light to heavy
Pollutant: viscous to highly viscous
Sea: tidal or non-tidal



Adaptation of a pick-up



EQUIPMENT NEEDED

Basic equipment:

- Sand screeners (large and small)
- Tractor

Extra equipment:

- Tractor with loader (for removal)

DESCRIPTION/PRINCIPLE

Involves screening the surface layer of the beach in order to selectively remove clusters of pollutant and various soiled debris. This technique is carried out using sand screeners, often used to clean tourist beaches. Two sizes of machines exist: large screeners, usually towed by farm tractors, and small self-propelled screeners.

The large screeners function in two successive stages: a vibrating blade digs into the sediment to lift up the surface layer, which is then pushed onto a mesh conveyor belt (most models are equipped with a threshing/loosening system, or a clawed pick-up, to aid the pick up process) where the screening occurs. Elements which are larger than the size of the mesh are dropped in a receptacle at the end of the belt.

The small screeners function in a similar way, obviously with a lower output, and are fitted with finer mesh (5 to 15 mm, instead of 15 to 28 mm for the large ones). They do not reach as great a depth (5 cm instead of 20 cm for the larger ones). They allow finer screening operations, especially in sections which cannot be accessed by large screeners.

CONDITIONS OF USE

Pollution: exclusively on clusters of viscous pollutant (tar balls to patties) and soiled debris; for use during final stage of clean-up, but also during initial recovery, requiring an adaptation of material and methods.

Substrate: homogeneous sand, not too coarse, free from too many large elements (stones, shells); not too compact (slightly humid to dry). Good to moderate load-bearing capacity.

Site: access possible for farm machinery; large enough and free of obstructions to allow easy manoeuvrability.

IMPACT ON THE ENVIRONMENT

Physical: in the event of poor usage, possibility of disproportionate removal of clean sediment; deconstruction and destabilisation of the foot of the dune (upper end of beach); eventual erosion.

Biological: low impact on slightly sensitive psammophilous fauna in dry sand. Potentially great impact in the event of poor practices or overuse: destruction of the embryonic dune and the associated pioneer vegetation berm in front of the dune, decrease in biodiversity and fertility by reduction of the low water mark.

PERFORMANCE

Efficiency: varies according to the site, pollution, machinery, drivers etc.; repeated runs are generally necessary; for large screeners: $\frac{1}{4}$ [(speed (0.3 to 3 km/h) x average width (#2m) x depth)]. The depth is adjustable (0 to 20 cm).

Minimum workforce required: 1 driver

Waste: varied solid waste, tar balls, patties of oil with a small quantity of sand; overall oil content: at least 20% (but very much less in the case of poor implementation).

OBSERVATIONS

- Equipment is widely available, especially in popular tourist areas.
- Requires tractors which work at low speeds (0.3 km/h), are powerful enough (120 cV mini) and are fitted with suitable tyres.
- Can tend to fragment the pollutant in certain conditions.
- Phase 1 and 2 technique: the material must be adapted to optimise the equipment in the initial clean-up phase: pick-up claws can be replaced with flexible flaps.
- Requires brief training beforehand on the necessary adaptations to material (initial clean-up), specific operational modes and the potential ecological impact.
- Follow environmental and operational instructions. Do not use at the foot of a dune.